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DEPARTMENT OF EDUCATION
LELAND STANFORD JUNIOR UNIVERSITY

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FIFTH BIENNIAL REPORT

OF THE

Superintendent of Public Instruction

OF THE

STATE OF CALIFORNIA,

FOR THE

SCHOOL YEARS 1872 AND 1873.

DEPARTMENT OF EDUCATION
LELAND STANFORD JUNIOR UNIVERS

SACRAMENTO:
T. A. SPRINGER, STATE PRINTER.
1873.

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DEPARTMENT OF PUBLIC INSTRUCTION,
SACRAMENTO, November 1st, 1873.

To His Excellency,
NEWTON BOOTH,
Governor of California:

SIR: In accordance with the provisions of subdivisions two and three of section fifteen hundred and thirty-two of the Political Code, I have the honor herewith to submit to your Excellency the fifth biennial report of the Superintendent of Public Instruction for the school years ending June thirtieth, eighteen hundred and seventy-two and eighteen hundred and seventy-three.

Very respectfully, your obedient servant,

HENRY N. BOLANDER,
Superintendent of Public Instruction.

REPORT.

The actual and comparative condition and progress of the Public Schools of California, for the two years commencing July first, eighteen hundred and seventy-one, and ending June thirtieth, eighteen hundred and seventy-three, may be summarized as follows:

CENSUS STATISTICS.

	1872.	1873.
Number of white children between the ages of five and fifteen years...	135,198	139,596
Number of negro children between the ages of five and fifteen years...	874	944
Number of Indian children between the ages of five and fifteen years.	1,279	1,070
Total number of census children between the ages of five and fifteen years	137,351	141,610
Total number of census children in 1871	.....	130,116
Increase	.....	11,494
Number of white children who have attended public schools at any time during the school year	92,255	97,018
Number of negro children who have attended public schools at any time during the school year	385	458
Number of Indian children who have attended public schools at any time during the school year	144	205
Total number of census children who have attended public schools at any time during the school year	92,784	97,681
Total number in 1871	.....	83,628
Increase	.....	14,053
Average number of census children belonging to public schools	71,481	71,170
Average daily attendance of census children	64,375	63,063
Percentage of total number enrolled	67.55	68.96
Percentage of average number belonging	52.04	50.26
Percentage of daily attendance	46.86	44.53

SCHOOL FACILITIES OF CENSUS CHILDREN FOR 1873.

	Total number enrolled.	Average number belonging.	Average daily attendance.
In schools maintained ten months or more	46,309	33,741	29,895
In schools maintained nine months or more	7,598	4,748	4,207
In schools maintained eight months or more	18,121	13,203	11,696
In schools maintained seven months or more	7,390	5,384	4,704
In schools maintained six months or more	5,499	4,007	3,550
In schools maintained five months or more	4,942	3,601	3,190
In schools maintained four months or more	2,619	1,904	1,687
In schools maintained three months or more	2,840	2,069	1,833
In schools maintained less than three months	2,363	1,722	1,526
RECAPITULATION.			
In schools maintained eight months or more	72,028	51,692	45,798
In schools maintained less than eight months	25,653	18,687	15,490
Percentage of census children in schools maintained eight months or over	50.86	36.50	32.34
Percentage of census children in schools maintained less than eight months	18.10	13.19	10.94

	1872.	1873.
Total number of census children who have attended only private schools at any time during the school year	13,787	12,507
Total number in 1871		15,524
Decrease		3,017
Total number of census children who have attended no schools during the school year	30,780	31,422
Total number in 1871		30,964
Increase		458
Percentage of census children enrolled in public schools	67.55	68.96
Percentage of census children enrolled in private schools	10.04	8.84
Percentage of census children attending no schools	22.41	22.20

But in order to obtain a correct estimate of the attendance at school of census children, we must take the average number belonging, that is the number of children who can be considered as actual pupils of the public schools, instead of the total number enrolled, as in this number are included all those who attend for so short a time—sometimes only for a day, or at longest for a week—that they cannot be classed as pupils of the public schools. The school attendance will then stand:

	1872.	1873.
Number of census children attending public schools	71,481	71,170
Number of census children attending private schools	13,787	12,507
Number of census children attending no schools	52,083	57,939
Percentage of census children attending public schools	52.04	50.26
Percentage of census children attending private schools	10.04	8.84
Percentage of census children attending no schools	37.92	40.90

SCHOOL STATISTICS.

	1872.	1873.
Total number of school districts	1,395	1,462
Total number in 1871	.....	1,326
Increase	.....	136
Number of districts maintaining a ten months' school	.....	135
Number of districts maintaining a nine months' school	.....	100
Number of districts maintaining an eight months' school	.....	402
Number of districts maintaining a seven months' school	.....	188
Number of districts maintaining a six months' school	.....	173
Number of districts maintaining a five months' school	.....	153
Number of districts maintaining a four months' school	.....	97
Number of districts maintaining a three months' school	.....	142
Number of districts maintaining school less than three months	.....	72
RECAPITULATION.		
Number of districts maintaining school eight months or over	.....	637
Number of districts maintaining school less than eight months	.....	825
Number of first grade schools	318	465
Number of second grade schools	643	761
Number of third grade schools	693	642
Total number of schools	1,654	1,868
Total number of schools in 1871	.....	1,550
Increase	.....	318
Whole number of boys enrolled on register	49,764	56,247
Whole number of girls enrolled on register	44,956	51,346
Total number enrolled	94,720	107,593
Total number enrolled in 1871	.....	91,332
Increase	.....	16,261
Number enrolled between the ages of five and fifteen years	92,784	97,681
Number enrolled over fifteen years of age	1,936	9,912
Average number belonging	72,972	78,395

SCHOOL STATISTICS—Continued.

	1872.	1873.
Average number belonging in 1871	.....	72,031
Increase	.....	6,364
Average daily attendance	65,700	69,461
Average daily attendance in 1871	.....	64,286
Increase	.....	5,175
Percentage of average number belonging	77.04	72.86
Percentage of average daily attendance on total number enrolled	69.36	64.56
Percentage of average daily attendance on average number belonging	90.03	88.60
Number of male teachers	881	882
Number of female teachers	1,420	1,454
Total number of teachers	2,301	2,336
Total number of teachers in 1871	.....	2,052
Increase	.....	284
Average number of months schools were maintained, for all the schools of the State	6.38	6.14
Average number of months schools were maintained for all the schools of the State in 1871	.....	6.15
Decrease	.....	0.01
Number of schools for colored children	24	22
Number of schools for colored children in 1871	.....	20
Increase	.....	2
Number of pupils attending schools for colored children	537	414
Number of pupils attending schools for colored children in 1871		510
Decrease	.....	96

FINANCIAL STATISTICS.

RECEIPTS.

	1872.	1873.
Received from State apportionments	$424,021 85	$430,219 60
Received from State apportionments in 1871		423,550 89
Increase		$6,668 71
Received from county apportionments	$988,636 21	$1,179,072 45
Received from county apportionments in 1871		889,622 86
Increase		$289,449 59
Received from district taxes	$261,306 90	$362,525 05
Received from district taxes in 1871		144,265 93
Increase		$218,259 12
Received from rate-bills, subscriptions, and miscellaneous sources	$232,075 22	$310,502 30
Received from rate-bills, subscriptions, and miscellaneous sources in 1871		212,151 60
Increase		$98,350 70
Total receipts (including balance on hand at beginning of the school year)	$2,131,783 58	$2,551,779 07
Total receipts (including balance on hand at beginning of the school year) in 1871		1,884,586 84
Increase		$667,192 23

FINANCIAL STATISTICS—Continued.

	1872.	1873.
Percentage of school funds from State apportionments	19.89	12.94
Percentage of school funds from State apportionments in 1871		22.47
Decrease		9.53
Percentage of school funds from county apportionments	46.38	46.26
Percentage of school funds from county apportionments in 1871		47.21
Decrease		.95
Percentage of school funds from other sources	33.73	40.80
Percentage of school funds from other sources in 1871		30.32
Increase		10.48
Amount of State apportionment per census child	$3.30	$3.18
Amount of State apportionment per census child in 1871		3.56
Decrease		.38
Amount of county apportionments per census child	$7.60	$8.58
Amount of county apportionments per census child in 1871		7.31
Increase		$1.27
Amount from other sources per census child	$5.53	$6.86
Amount from other sources per census child in 1871		4.69
Increase		$2.17

EXPENDITURES.

	1872.	1873.
Paid for teachers' salaries	$1,282,799 15	$1,434,366 93
Paid for rent, repairs, fuel, and contingent expenses	277,900 99	275,674 71
Paid for school libraries	25,793 54	24,879 48
Paid for school apparatus	4,720 13	4,365 70
Total current expenses	$1,591,213 81	$1,739,286 82
Total current expenses in 1871		1,311,050 08
Increase		$428,236 74
Paid for sites, buildings, and school furniture	$290,119 01	$374,069 44
Paid for sites, buildings, and school furniture in 1871		390,158 50
Decrease		$16,089 06
Total expenditures	$1,881,332 82	$2,113,356 25
Total expenditures in 1871		1,701,208 58
Increase		$412,147 67

FINANCIAL STATEMENT—Continued.

Average amount needed for a ten months' school, for every teacher employed...	$1,087 22
Average amount needed for a nine months' school, for every teacher employed...	758 84
Average amount needed for an eight months' school, for every teacher employed	699 00
Average amount needed for a seven months' school, for every teacher employed	549 33
Average amount needed for a six months' school, for every teacher employed...	439 06
Average amount needed for a five months' school, for every teacher employed...	394 53
Average amount needed for a four months' school, for every teacher employed..	318 93
Average amount needed for a three months' school, for every teacher employed..	230 48

	1872.	1873.
Average monthly wages paid to male teachers	$80 82	$84 28
Average monthly wages paid to male teachers in 1871		74 58
Increase		$9 70
Average monthly wages paid to female teachers	$66 33	$63 37
Average monthly wages paid to female teachers in 1871		60 69
Increase		$2 68

SCHOOL PROPERTY.

	1872.	1873.
Valuation of lots, school houses, and furniture	$3,685,912 58	$3,896,553 25
Valuation of school libraries	108,098 88	124,256 81
Valuation of school apparatus	28,651 69	36,605 39
Total valuation of school property	$3,822,663 15	$4,057,415 45
Total valuation of school property in 1871		3,362,580 18
Increase		$694,835 27

COMPULSORY EDUCATION.

In the preceding summaries, I have endeavored to exhibit the condition and progress of the public schools of the State. I have given special attention to the collecting and collating of the data which are necessary to the consideration of two questions which preëminently claim the serious attention of the people and Legislature of California. The first, called by some the most important school question of modern times, may be stated as follows: How shall we arrest the evils of non-

attendance and truancy, and secure to every child of the State the rights and benefits of education? The second question relates to the ways and means of providing for every district of the State sufficient and equal educational facilities.

The following statistics will show the attendance at public and private schools, and the non-attendance and truancy of census children, for a period of eight years. It would be misleading to include in this table the statistics previous to eighteen hundred and sixty-six, as up to that year children between four and eighteen years of age were listed on the school census, and since then only children between five and fifteen years of age.

The statistics given in the first table are taken from the Census Marshals' reports. The statistics given in the second table are computed as follows: The percentages of the average number belonging are taken from the teachers' reports, and are computed on the total number enrolled in schools, including in this number, of course, all children over fifteen years of age. The same percentages are retained in computing the percentages of the average number of census children belonging to public schools. There may be a greater irregularity of attendance by children over fifteen years of age, especially in country districts, but any errors arising from this source are more than balanced by the number of children over five years of age who do not enter a school until seven years of age, or more. In eighteen hundred and seventy-three, the average number belonging to public schools was 72.86 per cent of the total number enrolled in the schools; 72.86 per cent of ninety-seven thousand six hundred and eighty-one, the number of census children enrolled in public schools, gives us seventy-one thousand one hundred and seventy as the average number of census children belonging to public schools, or 50.26 per cent of the total number of census children. In other words, though of one hundred and forty-one thousand six hundred and ten census children listed by the Census Marshals, ninety-seven thousand six hundred and eighty-one, or 68.96 per cent, were enrolled in public schools, yet only seventy-one thousand one hundred and seventy, or 50.26 per cent, attended school regularly enough to be entitled to be considered as pupils of public schools. The difference between ninety-seven thousand six hundred and eighty-one and seventy-one thousand one hundred and seventy will give us the number of census children which must be classed as truants, that is, children of very irregular attendance; and 18.70, the difference between 68.96 and 50.26, will be the percentage of truancy.

Year.	Listed on census.	Enrolled in public schools.	Percentage enrolled.	Enrolled in private schools.	Percentage.	Attended no school.	Percentage.
1866...	85,152	37,906	44.51	25,475	29.92	21,771	25.57
1867...	94,349	54,726	58.00	18,182	19.38	21,441	22.62
1868...	102,183	60,946	59.64	17,654	17.28	23,583	23.08
1869...	110,642	67,834	61.31	17,344	15.68	25,464	23.01
1870...	121,751	70,030	57.44	24,654	20.33	27,067	22.23
1871...	130,116	83,628	64.27	17,029	13.50	29,459	22.64
1872...	137,351	92,255	67.55	13,787	10.04	30,780	22.41
1873...	141,610	97,681	68.96	12,507	8.84	31,422	22.19

Year.	Listed on census.	Average number belonging to public schools.	Percentage.	Percentage of truancy on number of census children.	Percentage of non-attendance and truancy combined.
1866.....	85,152	28,232	33.15	11.36	36.93
1867.....	94,349	41,411	43.89	14.11	36.73
1868.....	102,183	45,667	44.69	14.95	38.03
1869.....	110,642	52,168	47.15	14.16	37.17
1870.....	121,751	50,155	41.19	16.25	38.48
1871.....	130,116	65,949	50.68	13.59	36.23
1872.....	137,351	71,481	52.04	15.51	37.92
1873.....	141,610	71,170	50.26	18.71	40.90

Two facts are brought prominently to view by the above statistics: the steadily increasing popularity of public schools, and the almost inappreciable abatement of the evils of non-attendance and truancy. In eight short years the attendance at private schools has decreased 21.08 per cent; fifteen thousand two hundred and ninety-four children, in a total of one hundred and forty-one thousand six hundred and ten, have been transferred from private schools to public schools. No greater tribute can be paid to the popularity of our public school system.

But while we are steadily gaining for our public schools the support of those who were at first opposed or indifferent to them, we have signally failed to impress that large class of people who, through self-interest, carelessness, or ignorance, ignore the claims of their children to the rights and benefits of at least a common school education. To have reduced in eight years the non-attendance only 3.38 per cent, or four thousand seven hundred and eighty-six in a total of one hundred and forty-one thousand six hundred and ten, and to find that truancy has increased 7.35 per cent, and now amounts to twenty-six thousand four hundred and ninety-five in a total of one hundred and forty-one thousand six hundred and ten, is a very discouraging showing for our State.

It may be claimed that this is a gloomier showing than the facts warrant. There is little ground for such belief if based upon supposed inaccuracies in taking the census. County Superintendents and Census Marshals were repeatedly instructed to list in the number attending public schools, every child which had attended a public school at any time during the school year, no matter for how short a time, if even only for a day. That this instruction was closely followed, is proved by the number of children which formed the average number belonging to public schools; of ninety-seven thousand six hundred and eighty-one listed as having attended public schools at any time during the school year, only seventy-one thousand one hundred and seventy of these have attended long enough and regularly enough to be entitled to be considered as pupils of the public schools. That even among this number a large percentage was irregular in attendance, is proved by the fact that the average daily attendance was only sixty-three thousand and sixty-three, 88.60 per cent on the average number belonging, or 44.53 on the total number of census children.

For listing the number in attendance at private schools, the instruction was to exclude all who had at any time during the school year, if only for a day, attended public schools. This instruction was necessary

because the custom had been that if a child had attended both public and private schools, it was so listed. This was especially the case in districts in which private schools were maintained at the close of the public schools; and I have many districts on record in which the attendance at private schools nearly or fully equals the attendance at public schools, and both together far exceed the total number of census children. And this has been the case even in the reports for eighteen hundred and seventy-three, and instead of a shortage there is most likely an excess in the attendance at private schools. For, if in any case the sum of the attendance at public and private schools and the non-attendance, exceeded the total number of census children, the excess was invariably deducted from the non-attendance, making the latter less than the real number. This will seem less doubtful if we bear in mind the natural reluctance of parents to acknowledge that their children are attending no school whatever.

However gloomy, then, the educational outlook of California may be, I am convinced that the above statistics present a fairer view than would be warranted by the facts, could they be accurately ascertained. At the same time, I am fully convinced that, now that once the real extent of the growing evils of non-attendance and truancy has been exhibited, the remedy will be promptly and unshrinkingly applied.

To the question, "What is this remedy?" only one answer can be given, or at least only one answer has thus far been found. Admitted that education forms the only secure foundation and bulwark of a *republican* form of government, if not of every form of government; admitted that the universality of education becomes thus of vital importance to the State; and admitted that the exigencies of the case not only empower but compel the State to provide all the facilities necessary to enable every child to acquire at least a common school education, and we are forced to the conclusion that it is not only the privilege, but the duty of the State, to compel every parent to bestow upon his children at least the education which the State places within his reach.

Education is one of the primary conditions necessary to the very existence of a civilized government. This proposition is so well established and universally acknowledged as to have become trite, and any further consideration of it, beyond its mere enunciation, is unnecessary. The extension and intensity of education in a nation will determine the degree of the nation's civilization, and the degree in which a nation's government is a government "for the people and by the people." This latter office of education has received the fullest recognition in the United States, and every State has declared its conviction that "knowledge and learning generally diffused through a community are essential to the preservation of a free government."

The fundamental idea of government is "the protection of society and its members, the security of property and person, the administration of justice therefor, and the united efforts of society to furnish the means to authority to carry out these objects." The first means thus furnished to authority are the powers of prescribing and enforcing "rules of action" or laws, and to punish any infraction of these laws; that is, to punish crime. But a still higher power than the mere defining and punishing of crime has been delegated by society to authority, namely, the power to prevent crime by diminishing and, if possible, removing altogether the causes of crime. Fear of punishment helps to repress crime, but only as far as detection is quick and sure, and punishment swift and certain. The repressing or removing of the motives or

temptations to commit crime not only represses crime, but prevents crime by making its commission impossible from its unreasonableness.

"Illiteracy is incipient crime," or, as Dr. Lyman Beecher expresses it, "Uneducated mind is educated vice." Experience has given this proposition the force of an axiom in sociology. But there is not only a necessary direct relation between illiteracy and crime; there is also a necessary direct relation between illiteracy and pauperism; and as there is no less a necessary direct relation between pauperism and crime, we have crime once more as a resultant—crime as a direct result of illiteracy; crime as an indirect result through the medium of pauperism, but no other ultimate result than crime.

Hence, in every scheme of civilized government education has been recognized as the only force sufficient to diminish and remove the causes of crime. But education has another office. From the loss of supremacy in manufactures to the terrible downfall of a warrior nation before a student nation, history teaches the lesson: education is the first condition necessary to the prosperity of a nation.

History teaches still another lesson: education will be generally diffused only under a system of public schools; that is, under a system in which either the State by direct taxation raises the funds necessary to support for a definite length of time the schools needed to give every child a common school education, or the State compels the different municipalities to establish and maintain such schools. The American States have generally chosen the former alternative; thus testifying, in the most emphatic manner, that as the prosperity, nay, the very existence of the State, depends upon education, so education shall be the first and paramount care of the State.

California, in common with her sister States, in her organic law, makes it the duty of the Legislature to "provide for a system of common schools, by which a school shall be kept up and supported in each district at least three months in every year." And, as if in a yearly popular ratification of this provision of the Constitution, we find the people from year to year more and more willing and eager to support our public school system, not only by availing themselves of the facilities it affords, but also by voluntarily taxing themselves in its support. The marked decreased percentage of children attending private schools, is not more remarkable than the almost enormous taxes the people lay upon themselves, if the maintaining of the public schools is at stake. And the different Legislatures of California have not been more illiberal than the people. As a former State Superintendent remarked to me, "no Legislature has ever yet refused to grant increased State aid, if it could be shown that the schools required it." People and Legislature have always held that "the public school is the cheapest defense of the nation;" that "it is a wise and effective system of police by which property and life and the peace of society are secured."

And why is the "*public* school the cheapest defense of the nation?" Why do we exclude the *private* school? Because the *public* school is the only school open to children whose parents are unable to pay for tuition; and did the State make no provision for such children, a majority of them would swell the ranks of the illiterate, and increase the number of recruits to the ranks of those against whose depredations and violence a system of police, of public hospitals, almshouses, etc., is our only protection.

It is also plain that the public schools contain: first, the children of all those who have the will and means to educate their children under

any circumstances, in public schools if possible, in private schools if necessary; secondly, the children of all those who are willing enough, but unable to educate their children in any but public schools; and thirdly, all the children whom the constant preaching, out of season and in season, "of the gospel of universal education by free public schools, the only gospel of political safety," has reclaimed from parental ignorance, carelessness, or cupidity.

And the question arises, then, "Shall the intemperate, the indolent, the thriftless, who do not contribute to the general welfare of the State, and yet receive its protection and enjoy its privileges, being in a minority, be permitted to transmit their ignorance through their children, prevent the successful operation of the law, and so defeat the will of the majority upon a question so interwoven with our highest interest, and our very existence as a free State? Just here let us remember, that the priceless boon of a free school is of incalculably more importance to the non-taxpayers than to any other class; for the property holders, as a class, will educate their children, under any financial system. Now, if the State, for high social, moral, and political reasons, can justly coerce the property holders * * * into the support of universal, free education, * * * can it not, ought it not, for every reason, to insist that the children in whose interest the law was passed, and for whom such ample provision is made, shall avail themselves of the proffered opportunities of instruction?"

And from the friends of compulsory education in Pennsylvania we receive the answer: "Of the right and duty, and of the real humanity of compelling children to attend school, we have no doubt; and any measure which rescues children from the demoralizing effects of parental carelessness or cupidity, and which does all that can be done to save society from the deplorable effects of adult ignorance and stolidity, is quite within the limits of wise and far-seeing legislation, and is the best fruit of the most comprehensive statesmanship."

Chancellor Kent says: "A parent who sends his son into the world *uneducated* and without skill in any art or science, does a great injury to mankind as well as to his own family, for he defrauds the community of a useful citizen and bequeaths to it a nuisance." Society has empowered authority to abate this nuisance which imperils the moral and intellectual health of the community, just as society has empowered authority to abate those physical nuisances which imperil the physical health of the community; and as society makes it the imperative duty of authority to compel every member of the community to avail himself of the means provided for the abating of physical nuisances, so society makes it, or should make it, the imperative duty of authority to compel every member of the community to avail himself of the means provided for the abatement of moral and mental nuisances. In other words, education must be made obligatory.

"Let but the shadow of approaching pestilence touch our shores, and instantly the hygienic decrees of municipal Legislatures and Boards of Health are as stern and absolute as the edicts of the Cæsars. Every incoming ship is brought-to at quarantine as peremptorily as if she meditated a bombardment of the city; and if she should fail to respect the signal, a shot across her bows would be speedily followed by another *amidships*. The vessel may be returning from a long voyage; no taint of disease may in fact be on board; hundreds of weary people may be within a league of their homes; no heed is paid to them; *pestilence* threatens the great city, and the ship shall not proceed till inspected by

the Health Officer. Read the proclamations that ring through the city at such times, commanding all men everywhere instantly to remove every nuisance, and to cleanse and disinfect their premises. And upon the least reported neglect, see the officers and employés of the health brigade, hurrying and swarming through the city, searching the dark purlieus, entering every suspected house, breaking down doors if opposed, peering into squalid nooks and corners, issuing peremptory orders, and *compelling* everybody, rich or poor, to obey the commands of the sanitary Board, or else themselves doing what is required, and compelling the owners to pay the expense. Only last Summer, when the death rate in New York increased so frightfully under the dog-day heats of July, some twenty-five families, the papers say, were actually turned temporarily into the streets, driven out of their dwelling places by the police, because the reeking dens in which they lived imperiled the public health.

"So the ordinary enactments concerning nuisances—the regulation of markets and market-places—the obstruction of streets and alleys—the abuse of public parks and buildings—the erection of houses within the fire limits—rules and ordinances in respect to vaccination, and other things innumerable. They are all compulsory—sternly so. They all, in one sense, abridge the personal liberty of the individual citizen; but because the *public good demands them*, they are enforced. And now, when the country is menaced by an evil which no quarantine can avert; when a malady is fastening itself upon the body politic that is beyond the skill of the Boards of Health; when a shadow is settling down upon the country the end whereof may be political death, and the people see it and know it, and there is but one remedy, why should it not be applied?"—[Hon. Newton Bateman.

But what is meant by compulsory or obligatory education? Simply a law enforcing the education of children. To illustrate, I quote a section of a bill on this subject, introduced into our Legislature last session:

"*The People of the State of California, represented in Senate and Assembly, do enact as follows:*

"Section 1. Every parent, guardian, or other person in the State of California, having control and charge of any child or children between the ages of seven and fourteen years, shall be required to send any such child or children to a public school for a period of at least twelve weeks in each school year, commencing on the first day of July, in the year of our Lord one thousand eight hundred and seventy-two, unless such child or children are excused from such attendance by the Board of Education of the city, or city and county, or of the Trustees of the school district in which such parents, guardians, or other persons reside, upon its being shown to their satisfaction that his or her bodily or mental condition has been such as to prevent attendance at school or application to study for the period required, or that such child or children are taught in a private school or at home in such branches as are usually taught in the primary schools of this State, or have already acquired a good knowledge of such branches; *provided*, in case a public school shall not be taught for three months during the year within three miles by the nearest traveled road of the residence of any person within the school district, he shall not be liable to the provisions of this Act."

Hon. B. G. Northrop, Secretary of the State Board of Education of Connecticut, has fully stated and answered the objections usually urged against obligatory education. Mr. Northrop frankly avows that his former objections to obligatory attendance were fully removed by

observations recently made in Europe. He states that "with growing faith in moral suasion as our main reliance in preventing absenteeism or reclaiming truants," he "contends for authority of the law, with its sterner sanctions to fall back upon in extreme cases. Where parental pride, interest, or authority fail, and juvenile perverseness is otherwise incorrigible, legal coercion should be employed." The importance of the subject will warrant me in giving a rather lengthy quotation, setting forth the views of Mr. Northrop:

"Mingling much with plain people in Germany and other countries where attendance at school is compulsory, I sought in every way to learn their sentiments on this question. After the fullest inquiry in Prussia, especially among the laborers of all sorts, I nowhere heard a lisp of objection to this law. The masses everywhere favor it. They say education is a necessity for all. They realize that the school is their privilege. They prize it and are proud of it. Attendance is voluntary in fact. Nobody seems to think of coercion. The law is operative, but it executes itself because it is right and beneficent, and commands universal approval. It is only the legal expression of the public will.

"Universal education, more than anything else, has fraternized the great German nation. It has improved her social life, ennobled her homes, promoted private virtue, comfort, and thrift, and secured general prosperity in peace. It has given her unequaled prestige and power in war. 'Whatever you would have appear in a nation's life, that you must put into its schools,' was long since a Prussian motto. The school has there been the prime agent of loyalty. Love of country is the germ it long ago planted in the heart of every child. The fruit now matured, gladdens and enriches the whole land. Wherever that lesson is heeded, it will enrich the world. Devotion to fatherland is the characteristic sentiment of the German people. Shall such a people, with such a history, complain of compulsory attendance? This law itself has been a teacher of the nation. It has everywhere proclaimed the necessity and dignity of the public school. Kings and nobles and ministers of State have combined to confirm and diffuse this sentiment, till now it pervades and assimilates all classes.

"The absence of complaint about coercive attendance is not due, as some have supposed, to an enforced reticence or restraint. Proofs of the utmost freedom of speech abound. The Prussian military system is a grievous burden to the people. They dread it and bitterly denounce it. The law which takes every young man from his friends, his business, and his home, for three weary years of military service is hard, and is freely condemned. Many young families have left their fatherland for America, and thousands more are now planning to emigrate in order to escape this arbitrary conscription. But even the father, who is most aggrieved by the army draft, lauds the school draft.

"In various parts of Prussia and Saxony, I inquired of School Directors, parents, and others, 'Do you have any difficulty in executing the coercive law?' The answers were all substantially the same. 'Many years ago,' replied one, 'there was some opposition; but the results of the law have commended it to all, and they obey it without complaint, and almost without exception.' The present generation of parents having themselves experienced its advantages, are its advocates. Said a resident of Dresden, 'A healthy child, of school age, can hardly be found in the city which has not attended school.' Were the question of compulsory attendance to be decided to-morrow in Saxony, by a plebiscite, it would be sustained by an almost unanimous verdict. Public opinion is now stronger even than the law. The people would sooner increase than relax its vigor. I nowhere learned of any recent cases of punishment for infractions of it. In many cases, I was assured, the penalty is practically unknown.

"The principle of obligatory instruction was advocated by the people before it was enacted by the government. The address of Luther to the municipal corporations, in fifteen hundred and fifty-four, contains the earliest defense of it within my knowledge, in which he says: 'Ah, if a State in time of war can oblige its citizens to take up the sword and the musket, has it not still more the power, and is it not its duty, to compel them to instruct their children, since we are all engaged in a most serious warfare waged with the spirit of evil, which rages in our midst seeking to depopulate the State of its virtuous men? It is my desire, above all things else, that every child should go to school, or be sent there by a magistrate.'

"The germ of this system in Prussia is found in a decree of Frederick II, in seventeen hundred and sixty-three: 'We will that all our subjects, parents, guardians, and masters, send to school those children for whom they are responsible, boys and girls, from their fifth year to the age of fourteen.' This royal order was revived in seventeen hundred and ninety-four, and in the Code of eighteen hundred and nineteen made more stringent, with severe penalties; first, warnings, then small fines, doubling the fines for repeated offenses, and, finally, imprisonment of parents, guardians, and masters.

"The penalties now are:

"First—Admonition, in the form of a note of warning from the President of the local School Commission.

"Second—Summons to appear before the School Commission, with a reprimand from the presiding officer.

"Third—Complaint to the magistrate by the Commission, who usually exacts a fine of twenty cents, and, for a second offense, forty cents; for a third, eighty cents, doubling the fine for each repetition of the offense.

"The registers of attendance and absence are kept with scrupulous exactness by the teacher, and delivered to the President of the School Commission. Excuses are accepted for illness, exceedingly severe weather, great distance from school, and sometimes on account of the pressure of work in harvest time.

"What are the objections to such a law in Connecticut? So far as I have heard, they are the following:

"1. Such a law would create a new crime. I reply, it ought to. To bring up children in ignorance *is* a crime, and should be treated as such. As the most prolific source of criminality, it should be under the ban of legal condemnation, and the restraint of legal punishment. All modern civilization and legislation has made new crimes. Barbarism recognizes but few. To employ children in factories who are under ten years of age, or who have not attended school, or to employ minors under eighteen years of age more than twelve hours a day, is each a new crime.

"2. It interferes with the liberty of parents. I reply again, it ought to, when they are incapacitated by vice, and other causes, for the performance of essential duties as parents. Many other laws limit personal liberty. The requisition to serve on juries, or to aid the Sheriff in arresting criminals, or the exactions of military service in the hour of the country's need—these and many laws do this. If the law may prohibit the owner from practicing cruelty on his horse or ox, it may restrain the parent from dwarfing the mind or debasing the character of his child. If the State may imprison and punish juvenile criminals, it may remove the causes of their crime, and its consequence of loss, injury, and shame. The child has rights not even a parent may violate. He may not rob his child of the sacred right of a good education. The law would justly punish the parent for starving his child, and more mischief is done by starving the mind than by famishing the body. The right of a parent to his children is founded on his ability and disposition to supply their wants of body and mind. When a parent is disqualified by intemperance, cruelty, or insanity, society justly assumes the control of the children. In ancient Greece, the law gave almost unlimited authority to the parent over his offspring. The same is true in some semi-barbarous nations now. In all Christian lands, the rights of the parent are held to imply certain correlative duties; and the duty to educate is as positive as to feed and clothe. Neglected children, when not orphans in fact, are virtually such, their parents ignoring their duties, and thus forfeiting their rights as parents. The State should protect the helpless, and especially these, its defenseless wards, who otherwise will be vicious as well as weak.

"3. It arrogates new power by the government. So do all quarantine and hygienic regulations and laws for abatement of nuisances. Now ignorance is as noxious as the most offensive nuisance, and more destructive than bodily contagions. Self-protection is the fundamental law of society.

"4. It is un-American and unadapted to our free institutions. To put the question in its most offensive form, it may be asked, 'Would you have policemen drag your children to school?' I answer, 'Yes, if it will prevent his dragging them to jail a few years hence.' But this law in our land would invoke no 'dragging,' and no police espionage, or inquisitorial searches. With the annual enumeration and the school registers in hand, and the aid of teachers and others most conservant in each district, school officers could easily learn who are the absentees.

"There is no country of the world more jealous of liberty and more averse to any form of usurpation than our sister Republic of Switzerland. It rejoices in being the land of freedom. It glories in free schools, free speech, free press, free trade, free roads, free bridges; for its roads, though the best in Europe, are without tolls, and even the most costly suspension bridges are free. It has freedom in religion, freedom in traveling, no passports being required, and no examination of luggage, no standing army, and no gendarmes brandishing the threatening hand of power, as everywhere else in Europe, and yet this free people, in all their twenty-two cantons, except four of the smallest, choose for themselves the system of compulsory attendance.

"In our country there is every assurance of kindness and conciliation in the execution of the law. The plan is truly democratic, for its entire management is for the people and by the people, through the school officers chosen by them and responsible to them. There is a large margin left in the construction of the law on our statute book in reference to children discharged from factory or other work for the purpose of attendance at school. The people plainly approve that law, stringent as are its provisions. I have heard no opposition to it in any part of the State. The only objection made to it, within my knowledge, is its limitation to the parents and guardians of those children who are *hired out*. They ask, 'While we are justly required to send our children to school, why are the parents of children unemployed, it may be the idle and vicious, excused?' This has the look of class legislation. Make this law impartial and universal in its application and you remove the only real objection as yet urged against it. This growing class of idle and ignorant children now claim our earnest attention. This law has already accomplished

great good, and brought into our schools many children, otherwise absentees. There have been no penalties, no prosecutions even. The law itself has been a moral force. It is itself an effective advocate of education to the very class who need it most. Were the same law made universal in its application, I anticipate no opposition, no infliction of penalties, no legal processes whatever. The silent authority of the law will add force to the other arguments and persuasions which must ever be our chief reliance. It will encourage the friends of the public schools to increased efforts in urging upon the indifferent and ignorant the great advantages of education. In the construction of the proposed law, also, there will be a large margin; there will be conciliation and careful consideration of the circumstances and extenuations of each case.

"It is largely through immigration that the number of ignorant, vagrant, and criminal youth has recently multiplied to an extent truly alarming in some of our cities. Their depravity is sometimes defiant, and their resistance to moral suasion is obstinate. When personal effort and persuasion, and organized benevolence have utterly failed, let the law take them in hand, first, to the public school, and if there incorrigible, then to the reform school. Those who need education most and prize it least are fit subjects for coercion, when all persuasives are in vain. The great influx of this foreign element has so far changed the condition of society as to require new legislation to meet the new exigency. The logic of events demand the recognition of compulsion, for we have imported parents so imbruted as to compel their young children to work for their grog, and even to beg and steal in the streets when they should be in schools.

"5. Compulsory education is monarchical in its origin and history. Common as is this impression, it is erroneous. Connecticut may justly claim to be one of the first States in the world to establish the principle of compulsory education. On this point our earliest laws were most rigid. They need but slight modification to adapt them to the changed circumstances of the present. Before the peace of Westphalia, before Prussia existed as a kingdom, and while Frederick William was only 'elector of Brandenburg,' Connecticut adopted coercive education. * * *

"In our early history, public opinion as heartily indorsed the principle of compulsory attendance, or, rather, so thoroughly believed in the necessity of universal education, and so generally desired and secured it for children and wards, that attendance lost its involuntary character. No doubt the law itself, originally, contributed to diffuse and deepen this sentiment. If at first it was the cause, it became at length only the expression of public opinion. The requirements of this law, that 'THE BARBARISM' of ignorance should not be tolerated in any family, helped to make it disgraceful to keep even an apprentice from school. To bring up a child or ward in ignorance was shameful and BARBAROUS in the eyes of our fathers. This is still the sentiment of the genuine Connecticut 'Yankee.' High appreciation of education is one of the most precious traditions of our State. To it we owe our growth, prosperity, and liberty. But now we are a polyglot people. Immigrants from every nation in Europe abound, and some have come from Asia and the islands of the sea. The Germans and Jews, the Hollanders, Scotch, Swedes, and Swiss, almost without exception, and most of the Irish, favor universal education. But there have come among us many others, ignorant themselves, and caring not if their children grow up like them. They are so ignorant as to be insensible to the evils of illiteracy. Yet, on the other hand, there is a growing number of immigrants, who, realizing how they have suffered all their lives from ignorance, desire a good education for their children.

"6. The most plausible objection to such a law is, that it would sometimes bring hardship upon poor parents; but our existing law provides for extreme cases, and authorizes the School Visitors to make such exceptions as necessity may require. The language of the statute is: 'Unless the School Visitors of the town in which such child may reside, shall excuse the child from such attendance, on its being shown to their satisfaction that the physical or mental condition of such child, or the pecuniary necessities of the parents, are such as to render such attendance inexpedient or impracticable.'

"Indeed, we have all the legislation needed, if we strike out the single clause which virtually limits the application of the law to the poor, or to those who are 'hired out' to work. We should thus obliterate all the complaint made against our existing law, viz.: that it is partial, and applies to only one class. It excuses the rich and the lazy, and binds only the *working* classes. The law says: 'Every parent, guardian, or other person, having control or charge of any child, between the ages of six and fourteen years, *who has been temporarily discharged from employment in any business, in order to be afforded an opportunity to receive instruction or schooling*, shall send such child to some public or private day school, for a period for which such child may have been so discharged.'

"If by reason of wealth, indolence, or vice, any children are not employed in some factory or other business, and are not discharged from such service in order to receive instruction or schooling, their parents or guardians are not affected by this law. The modification proposed would extend its application to all classes. It would then read: 'Every parent, guardian, or other person, having control and charge of any child between the ages of six and fourteen years, shall send such child to some public or private day school, or otherwise provide for the regular instruction of such child, for a period of at least three months in each year, unless the School Visitors of the town in which such child may reside, shall excuse the child from such attendance, on its being shown to their satis-

faction that the physical or mental condition of such child, or the pecuniary necessities of the parents, are such as to render such attendance inexpedient or impracticable.'

"The last provision above quoted, removes the objection of seeming severity to the poor. No public officers will show more sympathy to them than the School Visitors. In their hands, the administration of the law will be kind and paternal. The right to enforce will be used mainly as an argument to pursuade—an authoritative appeal to their good sense and parental pride. If any parents are too poor to send their children to school, individual charities, or town benefactions, cannot be better expended than for their relief. It is a short sighted policy to permit indigence to perpetuate ignorance. The poor should not be left to transmit their poverty, by robbing their children of the sacred rights of education. If the schooling of all should involve some hard-hip, evils more and greater far would follow from ignorance. Better stint the stomach for three months a year, if need be, than famish the mind for life. There need be, and in this land of plenty, there would be no starvation of the body, while that education is insured which will lessen the amount of hardship and poverty a thousand fold.

"7. It has been objected that the school system has taken so deep a root in the sympathies and social habits of the German people, that attendance would be just as large without the law as it is now. It may be so. But so far from being an objection, this fact is strong proof of the efficiency of that law which has itself helped create so healthful a public sentiment. Were the law to be abrogated to-morrow, the individual and general interest in public education would remain. The same might have been said of Connecticut for more than one hundred and seventy years after the adoption of compulsory education. During all that period, a native of this State of mature age unable to read the English language, would have been looked upon as a prodigy. Still, in Connecticut, as well as in Germany, it was the law itself which greatly aided in awakening public interest, and in fixing the habits, associations, and traditions of the people.

"8, It has been said that in some countries, without any coercive law, the attendance is as good as in Prussia or Saxony with such a law. This is simply a mistake. Holland has been cited as an illustration of this statement. But while the Dutch show commendable zeal for public schools, the attendance is not relatively as large as in Prussia, and illiteracy is by no means so rare as in Germany; but Holland has, indirectly, a system of compulsory attendance. It denies certain immunities and privileges and honors to the uneducated. The parents of children who are not instructed up to a required standard, cannot receive relief from certain charitable institutions. The ban of legal condemnation falls upon them as truly, though not as effectively, as in Prussia.

"In Rotterdam, Hague, Amsterdam, and elsewhere in Holland, I was assured that the working classes regard the school law as practically compulsory. No one is permitted to teach, even in a private school, who has not been duly 'examined and approved,' and the public supervision includes private as well as public schools.

"The tendency throughout all Europe is more than ever toward the recognition of the right and duty of the State to educate its entire population. Public sentiment, educated by recent events, now connects ignorance with crime, and poverty with individual and national weakness, as cause and effect. Sadowa taught Austria, and indeed all Europe, a salutary lesson. 'Defeated in war, let it be our policy to excel in the arts of peace!' became the national idea under the inspiration of Count Beust. There was nothing so wasting of zeal and strength in the mad cry of revenge, as now in prostrate France. Austria was not unwilling to learn from an enemy, and adopted the educational system of her conqueror. Her school system was reörganized and vitalized, and the principle of compulsory attendance was made prominent. Education is obligatory in Denmark, Norway, Sweden, and also in Switzerland, except in the four small Cantons of Geneva, Schwyz, Uri, and Unterwalden. The total population of these cantons is less than one seventeenth that of the whole nation. The new school law of Italy provides for both free schools and obligatory attendance, and includes the following important 'civil service reform': 'No one can be appointed to any State, Provincial, or Communal office whatever, who cannot read and write.'

"More than thirty years ago, Guizot, in his educational report to the French Government, ably opposed obligatory education, but the recent experience of France has changed his views, and now he is its earnest advocate. That one of his advanced age, long amongst the foremost men of France both as a scholar and statesman, cautious yet positive in his convictions, a historian in his tastes and studies and therefore conservative, should now stoutly advocate that compulsory system which he so successfully opposed when himself the Minister of Public Instruction in eighteen hundred and thirty-three, is significant. The logic of events during the last forty years proves that the very system which he largely originated is unsuited to the wants of the nation and the age. M. Jules Simon, the Minister of Public Instruction, explained to me his plan for the reörganization of Primary Instruction, by making it both gratuitous and compulsory. The penalties were to be a maximum fine of one hundred francs and *loss of suffrage for three years.* After the year eighteen hundred and eighty, no citizen was to become a voter who could not read and write. But his bill is likely to fail at Versailles. While Thiers proposed an increase of eighty millions in the budget for the army, he said nothing for education. Even under Napoleon, fifteen times more was spent for the army than for education, including primary, secondary, and superior. The provisions for superior education were liberal, and absorbed

nearly one half of the whole appropriation; leaving the primary schools most meager, both in quantity and quality. The Ultramontane party, now dominant, stoutly oppose both gratuitous and obligatory instruction, and little is likely to be done for the better education of the masses. The objection that obligatory instruction would challenge resistance as an act of usurpation, seems ludicrous in a land where military conscription and the most rigorous police surveillance are universal and unresisted. Gambetta, as well as Guizot and the liberal republicans, strongly advocate obligatory education. Even the Commune favored universal and compulsory education, as also do the majority of the Parisians still. The opposition comes from the clerical and conservative parties.

"The school law of England *permits* all local Boards to enforce attendance. Public sentiment throughout England is now changing rapidly in favor of making compulsory attendance national and universal, instead of permissive. As one of many illustrations of this change, Rev. Canon Kingsley, formerly favoring non-compulsion, now advocates the compulsory principle. He says: 'Let the public keep in mind this broad, ugly, dangerous, disgraceful fact: there are now one million three hundred and eighty thousand children in this kingdom who ought to be attending school, but who are not; one million three hundred and eighty thousand children growing up in ignorance, in a country which calls herself civilized, but which will be called by a very different epithet some two hundred years hence, unless she mends her way speedily.'

"The motto of the National Educational League, of which George Dixon, M. P., is President, is: 'EDUCATION MUST BE UNIVERSAL, UNSECTARIAN, COMPULSORY.' At the late General Conference of Non-Conformists, held at Manchester, January, eighteen hundred and seventy-two, and attended by one thousand eight hundred and eighty-five delegates, there seemed to be a great unanimity in favor of enforced attendance. This assembly was as remarkable in its character as in its numbers. The argument of Mr. Jacob Bright, M. P., on this subject, was received with great applause. He said that the best part of the Education Act, that which is worth all the rest put together, is the permission to compel attendance. He illustrated its effects by quoting from the report of the Stockport School Board, where the whole attendance had increased thirty-six per cent, and the average, twenty-six per cent. To give his own words: 'The improvement in Stockport and elsewhere under this system proves that compulsory attendance should be the absolute law throughout the entire kingdom.'

"The laboring classes are not opposed to such a law. They would welcome it. In England the working classes are all asking for a *national compulsory* system of education. By invitation of A. J. Mundella, M. P., I attended the National Trades' Union Congress, held at Nottingham, for the week beginning January eighth, eighteen hundred and seventy-two. That body seemed unanimous in favor of compulsory attendance. One of the leading members, an able and effective speaker, said that in large and crowded assemblies of working men he had often distinctly asked: 'Do you agree with me that we want a national compulsory system of education?' and not a dissenting voice had he ever heard from the workingmen. * * * * * * * * * * * *

"Obligatory attendance is a corollary from the compulsory school tax. The power that claims public money for the purpose of educating and elevating all classes may justly provide that such public expenditure shall not fail of its appropriate end through the vice, intemperance, or perverseness of parents. The State has the same right to compel the ignorant to learn that it has to compel the penurious to pay for that learning. If education is of universal interest, it must be universal in its diffusion. Many taxpayers have said to me: 'If you compel us, who have no children, to support schools for the good of the State, you must effectively provide that the children of the State fail not to share the advantages thus provided. While we, willing or unwilling, must support the schools, the children, by constraint if not from choice, should attend school.'

"Universal suffrage involves the necessity of universal education. Self-protection is the first law of the State, as of individuals. To perpetuate ignorance would be suicidal to the State."

If obligatory education is needed in Connecticut, whose total percentage of truancy and non-attendance is a little over nine per cent, what shall we, in California, say, where the total percentage of truancy and non-attendance is over forty per cent? Dare we stop short of compulsory education; dare we leave well enough alone; dare we still rely upon the voluntary system, and try yet a little longer to see whether the thousands of youths now attending only the "street school" will not voluntarily enter our private or public schools, and breathe purer air than tobacco smoke and whisky fumes; hear other words than gross profanity, and low, vile conversation; sing other songs than ribald songs; learn to live for a higher purpose than to roam the streets from day to day, and night to night, aping the vices and crimes of adults, and even openly defying authority, and anxious only to live as de-

bauchées, thieves, and, yea, even as murderers? Is our class of harpies who prey upon the community not yet large enough, and not yet numerously enough represented by youth ranging from the tenderest years to majority? Let the police records of every city, every town of California answer.

The only time the people have had an opportunity to express their will, they have declared themselves overwhelmingly in favor of compulsory education. Since then the fearful increase of "hoodlumism" has made the question one of vital importance. And to save themselves from the rapidly increasing herd of non-producers, who must be supported by the community at large, to save themselves from the wretches who prey upon society like wild beasts, some demand already that a law for compulsory education be supplemented by a law requiring the State to establish and maintain labor schools, school ships, industrial, and technical schools. The times demand not only that children be educated in the common English branches, but, also, that children be educated how to work.

But as a preliminary step, California must take her stand with Massachusetts, Connecticut, Maryland, Michigan, New Hampshire, Rhode Island, Nevada, and other States, and by law enforce the education of her children.

In conclusion, I call attention to two articles, hereto appended, copied from the report of the United States Commissioner of Education for eighteen hundred and seventy-two. The first article treats of the "Relation Between Crime and Education;" the second, of the "Relation Between Education and Pauperism."

THE RELATION BETWEEN CRIME AND EDUCATION.

BY EDWARD D. MANSFIELD, LL. D.

Quetelet, the most philosophical statistician of Europe, says that "society prepares the crime which the criminal commits."

This is true, in not only a real, but most profoundly moral and philosophical sense. Then what is society, or what is its preparation for individuals? And how? We may imagine a single person, or, rather, a single family of persons, living alone upon earth without any other law than their natural instincts. They are a law unto themselves. But we do not now find such persons. In fact, history knows mankind only as an association of many individuals, allied together by some common laws. This association we call civil society, and it is defined by laws, civil, social, and natural; and it acts upon individuals as the great forces of nature act upon particles of matter. But as society is a moral and not a physical being, it is responsible for the forces it puts in motion and the direction they take. It is responsible for the civil laws and the social laws it creates and enforces. It is bound to recognize the natural laws of human action. It is bound to know that want creates temptation; that passions must be restrained; that ignorance is blind and weak.

Society must recognize these facts, and it is bound to provide against the evils which result from them. If it fails to do this, it fails not only in its obligations to the law of God, but to the laws of its own existence. But if Quetelet's proposition be true, and we hold it is strictly so, then society has failed in some of these obligations. How does it fail? In what has it prepared crime? If we were to examine the apparent or superficial elements of crime only, we might imagine that society has done all it could for its prevention. Does not the statute law name and affix a punishment to every conceivable crime? Are not the officers of justice in pursuit of the criminal? Do not the Courts condemn him? Is he not sent to prison or to death? Certainly. But in all this we see rather the revenge of society than either prevention or reform. Prevention there is, to the extent of a salutary fear of punishment; but has society sought prevention to the extent of its power? Unquestionably, it will be agreed on all hands that prevention is the thing to be sought. If all crimes could be prevented, there would be no need of either punishment or reform. But we find that in all the earlier ages of civilization prevention of crime was

never sought except by the fear of punishment, and reform not at all. In the last century, especially within a few years, reform has been the special object of inquiry in the criminal system, and particularly in regard to human regulations. But great humanity to prisoners is only merciful to them, not society; and if it were possible to reform all the criminals in the country, it would be nothing to the great column of advancing criminals continually pressing forward. When we have reformed every criminal—an obvious impossibility—how shall society prevent crimes? That is the only real problem presented in the philosophy of criminal jurisprudence.

Quetelet says, "Society prepares the crime which the criminal commits." What does he mean? How does it prepare it? The influences of society are both positive and negative. When society enacts criminal laws, punishes crimes, erects penitentiaries, and endeavors to reform the criminal, it acts by positive means, and by those only. But where are its negative influences, on one side or the other? Let us illustrate this idea. A. B. was born into this world, not under advantageous circumstances. First of all, he was born poor. Secondly, because he was poor he was uneducated to a large degree, and therefore knew little of right or wrong. Thirdly, he saw just before him on the street a "coffee-house," "restaurant," "saloon," and he felt despondent and entered, becoming a regular customer. Was that his fault? Thus we see that A. B. was the victim of the negative influences of society. Society did not educate him. Society did not require that he should have any religious education. Society did not furnish him with work. Society did offer him the temptation of drink, and did not supply his wants. Thus society, in any fair and honest meaning of the word, did prepare the crimes which the criminal committed. What has society to say to this fact? Simply, and it is the truth, that society has not arrived at its perfection, that its progress is slow, and that this grand result of prevention must be among the last achievements of human progress.

One of the great facts revealed by statistics is, that in the same moral condition of society, the same proportion of crimes will be brought out. And why not? This was proved by Quetelet, in his statistics; was observed by Madam De Staël; and is made much of by Buckle, in his "History of Civilization." Buckle and others have made use of this to prove the very reverse of what is the fact; that is, they assume it as a law of fatality, which is just contrary to the fact. Quetelet makes no such mistake. He admits, and so states, that this apparently invariable proportion will depend upon the condition of society. If the moral condition of society changes, then this apparently uniform proportion will change also.

In the report for eighteen hundred and sixty-one of the Commissioner of Statistics for the State of Ohio we find the following: "The great mass of crimes, however, keeps an exact proportion to the population, and, unless the moral condition of society is changed, will continue to do so. Each year will reproduce the same amount of folly, immorality, and physical excitement, and from this again the same amount of crime. There is no department of statistics which has brought out more remarkable facts or more valuable results than this. It would scarcely be credible, if it were not absolutely proved by the statistics of France, Germany, and the United States, that a community having once subjected itself to certain vicious temptations and influences, must thenceforth produce and endure the same annual amount of crime, suffering, and injury against the happiness of society, in spite of all laws and all the machinery of restraint which can be invented or enforced. The condition of society remaining the same, the same crimes must result. It is, however, a most mischievous fallacy to suppose that, therefore, these results can not be changed, and that there is an inscrutable fate reproducing the same social evils, without any human power to change results. They will return with the same social condition, but there is no necessity that the same social condition should remain. Society has the power of self-reform. It has the power to take away temptation; to reward virtue; to encourage industry; and to restrain vice. It has the power to defend the individual against social wrongs and temptations which impair his peace and prosperity, quite as much as to embody armies and defend property. For what other purpose was government formed or law enacted?"

In the report of the Bureau of Education for eighteen hundred and seventy-one, it was shown that in New England a large number of crimes were caused by ignorance, and a large number by intemperance. On this state of facts, the question comes squarely up: "Has society a right to allow ignorance and intemperance, when they cause crime; when, in fact, they are the great causes of crime?" Society contents itself with punishing crimes, and with making a feeble attempt to reform the criminal. But while it is doing this, it prepares the crime for the criminal to commit. How? By its negative influence. It refuses to prevent crime. How? Society knows that ignorance is blind; that the poor, ignorant man rushes into crime, as he rushes into any thing before him, in total ignorance of the results. Hence the fear of punishment does not deter him, for he hardly ever knows anything of the law, and is too ignorant of consequences to be afraid. So, also, society knows that the temptations of the "saloon," the grog-shop (by whatever name called), will tempt the weak and ignorant till their inflamed passions lead to crime.

Thus society prepares the crime by its negative influences—its refusal to prevent the causes of crime. So long as society presents the same moral conditions, so long it will present the same proportion of crime; but society has the moral power of self-reform. Shall it be said that society refuses to exercise this power?

The only part of this question we propose to consider here directly is that of education.

All civilized nations are now convinced of the necessity of education, if it were only as a measure of defense. But if it were not so, a mere glance at the comparative conditions, in regard to crime, of educated and barbarous nations, would strike the inquiring mind with conviction. If we go to any barbarous people, such as the rude tribes of Africa, or the aboriginals of the South Sea, we find that such crimes as stealing, homicide, and impurity, are the rule, not the exception. Neither property nor person is safe in such countries beyond the restraint which fear and necessity impose upon such barbarous peoples.

The case is not much better in China, which, apparently more civilized, is, nevertheless, deficient in moral education.

The general fact is apparent that education is a force restraining vice and crime. Where it is purely intellectual, it restrains by teaching the truth expressed in the homely proverb, that "honesty is the best policy." Where it rises to the dignity of a Christian education, it teaches not only the restraint of the intellect, but the higher restraint of the conscience. In either case it is a restraining force, a moral power, over the appetites and passions of men.

Such being the general fact, we shall endeavor to demonstrate it by the statistics both of Europe and America, the latter being derived directly from the prisons, jails, and reformatories of the several States.

THE RELATION OF CRIME TO EDUCATION IN EUROPE.

For the power to exhibit this subject as regards Europe, we are indebted to Dr. E. C. Wines, who, as Commissioner of the United States Government to organize the International Prison Congress, propounded a series of questions while traveling in Europe during eighteen hundred and seventy-one. Many of the reports were made under the direct supervision of the Government, and the figures may be taken as thoroughly reliable. We shall use here only the totals, disregarding minor details. In this way we shall present the relation of crime to education in Europe in the most striking view.

FRANCE.

Of this country, Malte Brun, the scientific geographer, begins his account thus: "The influence of France may be compared to that which ancient Greece possessed over the civilized world. The French language has become the language of Courts and Embassadors; the literature of the same people has been admired by the enlightened of every nation. The inference of the reader from this declaration must be that the French are really an educated people, and producing the highest results of education in the fruits of humanity and civilization. But if this were said of what is really the nation, that is, of a great mass of the people, it would be entirely untrue, and furnish a signal proof of the superficial manner in which history is written."

In another part of his work, Malte Brun (quoting the tables of Balbi) shows the number of scholars (pupils in school) to be one in twenty-three of the population. The number of children and youth in the public schools of Ohio is rather more than one in four of the whole population. The number in the schools of France was at that time (eighteen hundred and thirty-two) only one sixth the number in proportion to the State of Ohio, or, in other words, of the number that ought to be in school in order to educate the whole people. This is corroborated by another statement, that, in eighteen hundred and thirty-three, out of thirty-eight thousand French communities, fourteen thousand were without any schools! In the meantime, great efforts were made to increase popular education; but in eighteen hundred and seventy there were still eight hundred communities totally without schools.

Is is said there are now five million children attending school, but as the population of France is now thirty-seven million, even all that are now claimed to be in school is only one in 7.4—that is to say, only about one half of what would be if the whole people were educated.

In eighteen hundred and fifty-six there were only sixty-three thousand primary schools, which, at the usual proportion of pupils, would give about four million five hundred thousand pupils, which corresponds with what has been stated, allowing for the increase of one million two hundred thousand since eighteen hundred and fifty-six, as stated by the French Government.

Looking, then, to the facts above given, that in eighteen hundred and thirty-two only one sixth of the French people were educated at all; that in eighteen hundred and fifty-six less than one half were educated, and that in eighteen hundred and seventy, only a half, we shall be within bounds when we say that in eighteen hundred and seventy more than half the French nation were not educated at all. Now let us look at the number and proportion of crimes committed in such a population. Let us take such general facts as we have, without reference to details.

Malte Brun gives the average number of births annually at about nine hundred thousand, of which seventy-four thousand were illegitimate. This is over eight per cent of the

whole. If we were to go into any neighborhood we should find each thirteenth child illegitimate. This shows how far ignorance has depraved the morals of the lower classes of the people. But as late as the past year (eighteen hundred and seventy-one) it is stated in the papers that there had been four thousand five hundred suicides in the City of Paris, which is two hundred fold the proportion which is found in the State of Ohio. If we suppose this to be exaggerated, or as a consequence of the recent war, there will be enough of this tremendous fact remaining to show how the want of the restraining force of education (especially of moral education) affects the very life of society.

Let us now proceed to trace the effect of this great ignorance in France on the number and character of crimes. The record is the most startling and convincing of anything we have seen in the annals of statistics. Dr. E. C. Wines gives this statement, derived from the best authorities:

Whole number of persons under arrest from 1867 to 1869.	444,133
Number unable to read	442,194
Or	95.63 per cent.
Average number of convicts from 1866 to 1868	18,643
Number unable to read	16,015
Or	87.28 per cent.
Average number of juvenile prisoners from 1866 to 1868	8,139
Number unable to read	6,607
Or	81.14 per cent.

We have shown above that at least half of the French people is in a state of total ignorance. Let us assume it as just half. At that time France had, in round numbers, thirty-six millions of people. Then we find these proportions, viz:

In eighteen millions of people "unable to read and write," there were four hundred and forty-two thousand one hundred and ninety-four arrests; that is, one in forty-one.

In eighteen millions of people who were commonly educated, there were one thousand nine hundred and thirty-nine arrests; that is, one in nine thousand two hundred and ninety-one.

Thus proving the proportion of criminals in the uneducated classes to be two hundred and twenty-six times as great as that of the educated classes.

The reader may say: "This is an exaggerated case, and, while the facts are apparently true, this proportion will not hold good in other countries."

We shall show in the sequence that the same general principle is true, and that when the people of different countries are more and more educated, then this proportion diminishes, until, if we could imagine such a thing, society would present itself on the one hand thoroughly educated, and on the other hand without crime and without reproach.

ENGLAND.

Our mother country is, in every just sense of the word, England. We therefore look with curious interest to the condition of her education, and its influence upon the production or the cure of crime. Let us look at the facts.

Dr. Wines gives the following figures:

Committed to county or borough prisons	157,223
Could neither read nor write	53,265
Proportion of totally ignorant	34 per cent.

IRELAND.

Wholly illiterate, or very imperfectly educated:

Males	21.74 per cent.
Females	63.24 per cent.

BELGIUM.

Unable to read	49 per cent.

SWITZERLAND.

Average of criminals unable to read through all prisons	83 per cent.

The prisons of Lenzbourg, Saint Galle, Neuchatel, give these special figures:

Illiterate	25.3 per cent.
Inferior education	36.9 per cent.
Passable education	30.4 per cent.
Good education	4.3 per cent.

ITALY.

Illiterate in ordinary prisons	40 per cent.
Illiterate in bagnios (prisons of high grade)	30 per cent.

NETHERLANDS.

Unable to read	35 to 38 per cent.

From the above we find that the proportion of criminals totally ignorant varies in different countries of Europe from thirty-five to ninety-five per cent; but this does not show the whole truth, for, in the reports from prisons in the United States, it is almost universally said that but few of the whole number have anything more than the lowest kind of education; and doubtless this is true of Europe. These statistics prove that in Europe ignorance among criminals is the rule, and education the exception.

Let us now examine this question more minutely in regard to our own country.

THE RELATION OF CRIME TO EDUCATION IN THE UNITED STATES.

Mr. F. B. Sanborne, of Massachusetts, in a report prepared for the International Prison Congress, has made some general remarks upon the statistics of American prisoners, which are very correct. He says: "The general condition of American prisoners, in point of education, is low, yet they are not so extremely illiterate as criminals are in many countries, if we except the colored criminals of the South.

"In Massachusetts, for a period of eight years past, the statistics show very *nearly one third* of all prisoners to be wholly illiterate, yet, in the highest prison, at Charlestown, the proportion of illiterate convicts, since the beginning of eighteen hundred and sixty-four, has been scarcely more than one in ten."

What Mr. Sanborne has remarked of Massachusetts, is in the main true of the whole United States, as will be seen from the numerous tables hereto annexed.

In the great aggregate of criminals the number of the *totally illiterate* is very large, but is by no means so large as in Europe, for the reason that no part of our country is so densely ignorant as many parts of Europe. So, also, on the other hand, there are some prisons where the number of the illiterate is small, because they are special prisons of cities, where the better educated criminals are apt to be confined. But we need not remark upon these facts till we exhibit the great mass of prison statistics we have gathered from the Middle and Western States.

The statements following give partial returns from seventeen States; all of them but three from the Middle and Western States. The aggregates, in regard to education, sum up as follows, viz:

Aggregate of prisoners	110,538
Aggregate of whites	91,427
Aggregate of blacks	6,396
Aggregate of foreign born	57,824
Aggregate of native born	41,942
Aggregate of those who can read and write	82,812
Aggregate of those who can read only	5,931
Aggregate of those who have no education	21,650

The discrepancies between the general aggregates and those for color and nativity are caused by the fact that, in some prisons, no record was kept of sex, color, or nativity. And here we take leave to make a general remark on the value of statistics.

All the advances in statesmanship (and it must be admitted there have been great advances in the last century), are due wholly (in connection with the more enlightened teachings of Christianity) to the advance of the science of statistics. If all the legislators, statesmen, and preachers in the world knew precisely the state of facts in society, they could legislate and preach with vastly more effect. Hence, in reference to the subject before us, if we had the exact statistics in regard to the whole prior condition of the criminals, we should know almost exactly how crime was caused, and what measures would, if possible, prevent it. But the statistics of prisons are not only defective in many particulars, but they are inconsistent. One prison gives the statistics of one set of elements, and another of another, and no one of all that ought to be given.

When a prisoner enters a prison, the keeper of that prison should define him exactly as a man of science defines a mineral, an animal, or a bug. He should describe his physical characteristics; his previous social status in regard to parentage, color, condition, and education, moral, religious, and intellectual; his religious, or his want of religious education, and his habits of life in regard to temperance or intemperance; his industry or idleness. These facts may be obtained, and they would be invaluable. They would show all the causes of crime, and, in showing them, would show the only means of prevention. In regard to the above aggregate facts, it may be observed:

1. That the whole number of those who can "read only" is described in the reports as in fact "very ignorant." To have learned to spell out words and read a litle gives no real knowledge.
2. That the prison reports almost uniformly speak of the great number of those who "can read and write," as very deficient in education.

The general conclusion is that the great mass of prisoners is very ignorant; but, in order to see this more clearly and understand it more thoroughly, we shall analyze in the sequel the special reports of the prisons. In the meanwhile the general conclusions of the aggregates above, including the observations of the prison keepers, are as follows:

The totally ignorant, as shown by those having no education, are	22 per cent.
The totally ignorant and very ignorant	25 per cent.
The very deficient, including these and a large share of those who can read and write	50 per cent.

These proportions are, in regard to the ignorant, much below those of Europe; and they ought to be, for it is beyond all doubt that, except the negroes of the South, the mass of the people of the United States is much better educated than in Europe. This is especially the case in New England, New York, and the central States of the Northwest. But in either case the general fact is shown, beyond doubt or controversy, that ignorance is one great cause of crime, and that, in elevating the education of society, both religious and intellectual, we advance the interests of society by diminishing crime.

Just so far, therefore, as society neglects to educate the people, just so far does it prepare the crime which the criminal commits.

Let us now examine our statistics in detail, with regard to color, nativity, and religious education.

In regard to sections of the country, taking the State prisons and jails of New York and Pennsylvania (deducting the metropolitan police reports), as representatives of the Middle States, we have these results, viz:

Aggregate number	12,772
Aggregate number of whites	11,268
Aggregate number of colored	1,465
Aggregate number of foreign born	4,658
Aggregate number of native born	8,003
Aggregate number of those who can read and write	8,501
Aggregate number of those who can read only	1,774
Aggregate number of those who have no education	2,360

The proportions are:

The totally ignorant	19 per cent.
The totally ignorant and very ignorant	33 per cent.
The very deficient, at least	60 per cent.

Let us now take the prisons and jails of the central Northwest, which includes the States of Ohio, Indiana, Illinois, Michigan, and Wisconsin.

Here we have the statistics of thirty penitentiaries, work-houses, and jails, a sufficient number and variety to give a complete view of the subject in those States. The results are as follows, viz:

Aggregate number	18,931
Aggregate number of whites	14,362
Aggregate number of colored	1,524
Aggregate number of foreign born	4,078
Aggregate number of native born	4,851
Aggregate number of those who can read and write	8,722
Aggregate number of those who can read only	935
Aggregate number of those who have no education	6,565

The proportions are:

Totally ignorant	40 per cent.
Totally and very ignorant	46 per cent.
The very deficient, at least	75 per cent.

Let us now take the States west of the Mississippi to the Pacific. Of these we have the reports of four State prisons in the States of Minnesota, Iowa, Kansas, and California. The results are:

General aggregate	1,957
General aggregate of whites	1,187
General aggregate of colored	205
General aggregate of foreign born	503
General aggregate of native born	696
General aggregate of those who can read and write	1,333
General aggregate of those who can read only	221
General aggregate of those who have no education	403

The proportions are:

Totally ignorant	21 per cent.
Totally and very ignorant	31 per cent.
The very deficient, at least	50 per cent.

Now, let us take the only States that we have of those formerly slave States, where the negro population prevails, viz: Maryland, Kentucky, Tennessee, Georgia, South Carolina. In these States the results are:

Aggregate number of prisoners	4,087
Aggregate number of whites	1,997
Aggregate number of colored	2,090
Aggregate number of foreign born	267
Aggregate number of native born	3,485
Aggregate number of those who can read and write	965
Aggregate number of those who cannot read and write	1,435

The States of Georgia and Tennessee, having one thousand one hundred and twenty-four prisoners, made no return of the state of education, and were otherwise defective. In the two thousand four hundred returned, the following are the proportions of educated and uneducated, viz:

Totally ignorant	60 per cent.
Very deficient, fully	85 per cent.

Thus we see that in the midst of the South, where the colored population is almost totally ignorant, we have the first approach in the United States to the educational condition of France in eighteen hundred and thirty-two, and of much of Europe now. Comparing the several sections of the country as presented in the above tables, and including those who can read only (and that is usually very little) among the totally ignorant, we have these proportions. Those called "very deficient" are put down in a low estimate, made from universal testimony of prison keepers:

Totally ignorant—very deficient.

In New York and Pennsylvania	33 per cent to 60 per cent.
Central Northwest	46 per cent to 75 per cent.
West and Pacific	31 per cent to 50 per cent.
The South	60 per cent to 85 per cent.

The returns from the "West and Pacific" are deficient, and therefore not a fair test. This, and the fact that the great body of miners are really intelligent men, make the reasons why that section seems to have less ignorance among criminals.

THE PROPORTION OF CRIMINALS TO THE ILLITERATE POPULATION IN REGARD TO EDUCATION.

Here we come to test facts in regard to the influence of ignorance in producing crime. If the proportion of ignorant criminals to the whole number should prove greatly above that of the illiterate to the whole population, it will be a fact conclusive that ignorance is one great cause of crime. Fortunately, the returns of education and illiteracy embodied in the census of eighteen hundred and seventy, will enable us to examine this question and obtain reliable results.

Taking the returns of the census of eighteen hundred and seventy in connection with the tables we have above given, we have the proportions below, premising, however, that, as all prisoners are above ten years of age, so we have taken from the "illiterate" in the census only those above ten years of age.

Illiterate Criminals.

In New York and Pennsylvania	4	per cent to 33 per cent.
In Central West	3½	per cent to 46 per cent.
In West and Pacific	3	per cent to 31 per cent.
In the South	22	per cent to 60 per cent.

It appears, therefore, that in the Middle States the proportion of illiterate criminals is eightfold the proportion of illiterate people; in the Central West it is thirteenfold; and in the West and Pacific States it is tenfold. In the South it is only *threefold;* but this is caused by the great mass of colored people, who make up a large portion of the whole people, and, being nine tenths of them wholly ignorant, furnish the great mass of criminals. When the still larger white population is counted in it makes the disproportion of the illiterate criminals less. As to colored people only it is very great. But we see in the above proportions the great fact that ignorance is one of the great causes of crime. We do not seek to exaggerate that fact. The figures we give show it in its naked deformity, and we leave the fact to the contemplation of our readers. But in the meantime, let us look at how this fact will operate in an intelligent American community. Let us see exactly how it will operate in New York or Pennsylvania. Let us take ten thousand people as the unit of measure. The result will be, according to the above proportions:

People	10,000
Illiterate	400
Estimated prisoners	40
Prisoners illiterate	35
Others	5

The "others" means only a very common education. What, then, is the practical result? That because four hundred persons out of ten thousand have been kept *totally* ignorant, the county or municipality has seven times as many criminals as it need have, and seven times as much expense and evil of all kinds resulting from it.

Having thus established certain general principles by the incontrovertible testimony of statistics, it will not be inconsequential or uninteresting to give the testimony of some of those who are engaged in the actual management of prisons.

The following statement, made by the Superintendent of the Detroit House of Correction, gives the general facts and causes of crime nearly as correctly as can be obtained from the general averages of the most extended table of statistics:

"Of the eight thousand seven hundred and forty-four prisoners, forty-four per cent were under thirty years of age; sixty-five per cent acknowledged themselves habitually intemperate; sixty-five per cent were living out of the family relation; only fifty-seven per cent claimed to be able to read and write; forty-three per cent acknowledging themselves without any education at all. The whole eight thousand seven hundred and forty-four, almost without exception, were poor and generally penniless on their admission to the institution. This fact, so generally true of criminals, must bear relation to their criminality. The improvidence that makes the spendthrift and pauper produces also the sensuality and selfishness that seek the means of indulgence without self-denial or regard for consequences."

Professor Tarbell, who has the school in the Detroit House of Correction, says:

"Of the one hundred and fifty men who have been examined individually on entering the school during the past six months, twenty-three were entirely ignorant of reading; thirty could read a little, but not well enough to use text books; while ninety-seven could read with tolerable readiness, and some of them with intelligence and expression. From this it appears that thirty-five per cent of those admitted were practically illiterate. In eighteen hundred and sixty-nine there were twenty-nine per cent of this class, and in eighteen hundred and seventy thirty-three per cent. Whether this apparently increasing illiteracy on the part of those committed to the House of Correction be due to the demoralizing effect of the late war on many men of intelligence, and that we are now returning to the more usual state of society in which the vicious are the ignorant, I will not say."

If the censuses of eighteen hundred and fifty, eighteen hundred and sixty, and eighteen hundred and seventy be compared, would not the whole country show the same result in regard to illiterates; and can any other result be obtained without compulsory education?

Mr. Cummings, the moral instructor of the California State Prison, says:

"A great majority of the prisoners on their commitment are illiterate; others have acquired merely the elements of knowledge, without being able to turn their slight educational acquirements to any practical use; while the number who have acquired a systematic or liberal education is so extremely limited that it has been found difficult to supply the classes with suitable teachers. Hence, when these unfortunate men have been approached in a kind and conciliatory spirit, very few have failed to respond in a similar spirit; and when the means of instruction have been provided for them they have eagerly availed themselves of the privileges of the prison school. The progress that many have made in their studies has been truly gratifying, and has demonstrated, not only the practicability, but the great importance, of furnishing educational facilities to prisoners."

The fact that most of those who say they can read and write are "not able to turn their slight educational acquirements to any practical use," is a fact which mere statistics do not show, but which the Warden or Chaplain at once discovers; and that fact is simply, that nine tenths of prisoners have literally no useful education. Mr. Cummings further says:

"The educational acquirements of prisoners here do not differ materially from a general statement that would apply to most prisons in other States. Of four hundred and seventy-eight prisoners committed from April eleventh, eighteen hundred and seventy, to July first, eighteen hundred and seventy-one, two hundred and thirty-two were entirely illiterate; ninety-five could read and write; one hundred and twenty could read and write very imperfectly, while but thirty-one were liberally educated."

Those who could read and write "very imperfectly" may, without error, be put down as uneducated. So that, practically, four fifths of all the California State prisoners were uneducated; and yet this fact does not half appear in the table of statistics.

The Board of Inspectors of the State Penitentiary of Tennessee, say:

"One out of every twenty-five of the entire population of Great Britain is a juvenile delinquent—a destitute vagabond, abandoned, and, in many cases, a law-breaking child before the age of seventeen. While the same proportion of such a class cannot be supposed to exist in this State, still the number is very large, and augmented daily with our increasing population. While no section of the State is entirely free from their presence, our larger cities swarm with them. They are found at every corner, and in every alley; at the doors of the saloon and the theater; at our depots and wharves; here their faces greet you with features pinched by their necessities into expression of premature shrewdness, bordering on villany, totally foreign to the faces of well-cared-for childhood. From the teeming crop of ignorant, neglected, and criminal children is produced the large majority, if not all, of the thieves, counterfeiters, forgers, burglars, robbers, and murderers who fill our penitentiaries; as also those subjects for seduction, and consequent prostitution, who fill the brothels of our cities."

Here is society preparing the crime which the criminal commits. Here is the negative preparation of non-education, and the positive one of temptation.

Mr. Darnell, Keeper of the Georgia Penitentiary, says:

"Of all reformatory agencies, religion is first in importance, because most potent in its actions on the human heart and life. Education is also one of the vital powers in the reformation of fallen men and women, who have generally sinned through the influences of some form of ignorance conjoined with vice. Its tendency is to quicken the intellect, expel old thoughts, give new ideas, supply material for meditation, inspire self-respect, support pride of character, excite to higher aims, open fresh fields of exertion, minister to social and personal improvement, and afford a healthful substitute for low and vicious amusements.

"It is, therefore, a matter of primary importance in the prevention of crime and the improvement of society, as well as the avoiding of that combat between crime and law which, in this country, has been the bane of our prosperity."

We need not cite any further testimony of this kind; this is, in substance, the testimony of all the keepers and officers of penitentiaries, prisons, jails, and reformatories in the country. It is the testimony of human experience on one of the most important points which concern human society. The evidence upon the intimate relation of crime and ignorance is clear, complete, and ample. It may be comprised in two general propositions:

First—That one third of all criminals are totally uneducated, and that four fifths are practically uneducated.

Secondly—That the proportion of criminals from the illiterate classes is at least tenfold as great as the proportion from those having some education.

If these proportions are true (and we have made rather an underestimate), then, after making due allowance for crimes committed from passion, without regard to education, and crimes, such as forgery, frauds, etc., which require some education, we must come to the conclusion that two thirds of crimes might be avoided by education, but more especially by religious training. Against this fact some one will reply that so also a large number of criminals are intemperate, and, therefore, we may attribute to intemperance a large number of the crimes we now attribute to ignorance. True, if these were parallel causes, but they are not. In the first place, a large number of the intemperate are such

from want of education, and especially from want of moral and religious training. We see a great many educated persons (that is, commonly educated) who are intemperate, but they seldom commit crime. Secondly, many of those committed to prison have become intemperate on account of previous criminal and vicious habits. But we shall not discuss this topic, except so far as to present some statistics both upon intemperance and upon color.

We give the following examples of the traits of prisoners in regard to temperance and intemperance, in some of the principal prisons, viz:

Institution.	Temperate.	Intemperate.
Northern Indiana Prison	105	104
Iowa State Penitentiary	122	158
Minnesota State Prison	41	46
Illinois State Penitentiary	672	743
Kentucky State Penitentiary	814	1,033
Detroit House of Correction	3,045	5,655
Total	4,799	7,739

Or in proportions:

Temperate	38 per cent.
Intemperate	62 per cent.

This proportion is rather larger than that which the statistics show as the *totally ignorant*, but not nearly so large as the *very ignorant* are reported to be by the keepers of penitentiaries, prisons, and jails.

Probably if we had the statistics of every prison and jail in the United States, the result would not be materially different from what we have given above. Let us now look a little at the proportions of the colored people in relation to crime and ignorance, remembering their long enslavement and the prohibition of letters to slaves:

Section.	Population.		Prisoners.	
	White.	Colored.	White.	Colored.
New York and Pennsylvania	1,786,826	117,375	11,268	1,465
Central Northwest	8,987,572	130,437	14,362	1,524
West and Pacific	2,720,272	29,393	1,187	205
South	3,568,901	1,680,888	2,058	2,414
Totals	23,063,511	1,957,873	28,875	5,608

The above does not contain the population of all the States in those sections, nor by any means all the prisoners, but it does show the proportions of white and colored people, and the proportions of white and colored prisoners; and this is the only purpose for which we have prepared this table.

In New York and Pennsylvania the proportion of colored population to colored prisoners, is eighty to one; but of white population to white prisoners, it is seven hundred to one.

In the central Northwest the proportion of colored population to colored prisoners is ninety to one; but of white population to white prisoners, seven hundred to one.

In the West and Pacific, the proportion of colored population to colored prisoners, is one hundred and forty to one; but of white population to white prisoners, it is two thousand three hundred to one.

In the South, the proportion of colored population to colored prisoners, is seven hundred to one; but of white population to white prisoners, one thousand seven hundred and eighty-four to one.

The only value attached to these proportions is to show that the negro population, being almost entirely ignorant, presents far the larger proportion of criminals. This we might

anticipate, but it is one of many great facts which show that ignorance is really the greatest cause of crime.

The nativity of criminals in the foregoing table is:

Foreign born	57,818
Native born	42,495

The foreign born in the United States are to the native population as one to seven. Hence, the foreign born criminals are to natives nearly in the proportion of ten to one. If, then, society suffers a large portion of its people to be ignorant; if it offers temptation to intemperance; if it neglects to encourage industry; is not the proposition of Quetelet most emphatically proved, that society prepares the crime which the criminal commits?

Can we have a more serious testimony to the duties of society on one hand, or the only means by which society now can be preserved from the destruction which has overtaken all the older nations of the earth?

THE RELATION BETWEEN EDUCATION AND PAUPERISM.

BY E. D. MANSFIELD, LL. D.

Pauperism may be defined as a disease of society—permanent in some measure—because, in the language of Scripture, the poor are "always" with us. Because it is a disease of society, we may and ought to ask, how far is society responsible for it? And how far can society prevent it? The same Scripture which says that these are always with us, says also that society is responsible for all its evils, and that there may be a state of society in which even this disease shall cease.

In addition to this, we find by our own observation that there are communities in which pauperism as a social disease does not exist at all. These are small communities, it is true, but they show the possibility of a state of society in which this great disease will not exist. Then the practical question is, *how* shall we arrive at that result? Can we prevent pauperism? Modern physicians, as well as statisticians, have arrived at the conclusion that a large number of diseases incident to personal humanity are preventable. Is not this equally as true of the diseases of society? Looking upon pauperism as we did upon crimes, is not Quetelet's proposition almost as true of pauperism as of crimes—that society prepares the causes of pauperism? The close and careful observer of society will acknowledge that to be a melancholy fact. If that be so, is it not the first duty of society to consider *how* it *prepares* for crime and pauperism? And if it does so prepare crime and pauperism, how can it avoid doing that, and how can it prevent the disease?

What do you find to be the actual measures of society in the cases of crime and pauperism? Why the actual measures of society are to make a prison to put criminals in, a jail for the accused, a poorhouse for the pauper, and a house of refuge for vagabond children. But not one of these is a *preventive*. Society, by these measures, is trying to compromise its own wrongs. It made a criminal, and then tries, first to punish him and then to prevent his doing any more mischief.

This is all well, provided we admit that society has any right to cause or permit the causes of crime and pauperism. It is no doubt true that there are natural causes of pauperism which cannot be avoided; and it is equally true that society has provided for these in other ways than those which it provides for pauperism, and ways which neither infer the disgrace of crime nor the reproach of poverty. Happily those whom nature has deprived of faculties or of mind are insensible to the defects of either, and thus the asylums which hold them may be regarded as the depositories of human charity.

Before we go into statistics, let us for a moment look at the causes of pauperism.

1. The greatest natural cause of pauperism is, undoubtedly, infirmities or diseases of the body; but when we look at it carefully we find that this cause makes comparatively few of those in the almshouses and infirmaries, for the reason that society has provided for these in separate institutions. The sick have the hospital; the lunatics, the idiots, the blind, the deaf and dumb, and the maimed soldier, all have institutions expressly provided for them. In such a State as Ohio, for example, there are all of these provisions for infirmities of every kind. There are five lunatic asylums, and there is a provision for every kind of human infirmity. In the infirmaries there are some of the *naturally* disabled, but not very many.

2. The number of those who become paupers from unavoidable misfortunes, is small. There are, doubtless, some of these; but, when we take from persons in the infirmaries who claim to be unfortunates those who are intemperate, or very ignorant, or naturally disabled, we shall find very few left.

3. One of the greatest causes of pauperism, as it often is of lunacy and of crime, is something which is called, generally, "imbecility," but which it is impossible to define accurately, both because these persons often appear to have good sense, and because this imbecility is natural as well as acquired. Perhaps in the majority of cases it is wholly acquired. There are vices, such as intemperance, which impair the judgment and the capacity for useful work; and there is also the negative imbecility which arises from ignorance. When ignorance has left the faculties of the mind totally undeveloped, they may have been naturally as good as others, yet they are almost useless in actual work. So long as such a person has an able body, and can find work, he will get along as an animal machine, directed. When he gets out of the employment in which others have placed him he becomes bewildered and often unable to help himself. Here society has caused pauperism by allowing ignorance.

4. Another great cause of pauperism, but far less in our own country than in Europe, is want of employment. This is not the cause of permanent but rather of temporary or occasional pauperism. Its consequences to society, and often to the individual, are precisely the same. In Cincinnati, for example, there are on an average ten thousand persons each year who receive what is called "outdoor relief." These are entirely outside of and independent of any public institution. They appear to be casual and temporary; but there will be just as many next year. Thus this temporary relief or casual pauperism becomes in fact permanent and an increasing charge upon the community. This kind of pauperism is largely due to the *want of employment*, and especially among the ignorant classes—and among these more largely among women. It exists especially during the Winter months. Here arises the question, which, if not practical to-day, will certainly become so in a few years: Is not society bound by moral and by prudential considerations to prevent this kind of pauperism? You may say, how! Natural infirmities, diseases, and calamities, we are bound to provide for in the best way we can, and it may be admitted that they will always exist and be unavoidable. But these do not make up the great body of paupers, and we may affirm positively that the great body of pauperism is avoidable, preventable. How? We see that what we have called "imbecility" and misfortune are due to three main causes: 1. Ignorance. 2. Intemperance. 3. Want of employment. To a very great extent all of these causes may be prevented; ignorance certainly may be prevented; the temptations to intemperance may be prevented; and society can and ought to furnish employment to those who cannot get it.

In Europe it is understood and admitted that on the question of employment depends mainly the question of pauperism, considered as a general disease. At present Great Britain is very prosperous; and we are told, in recent accounts, that paupers in Great Britain are one hundred thousand fewer in eighteen hundred and seventy-two than in eighteen hundred and seventy-one. This is because all industries are active and prosperous. Several years since appeared a work entitled "Pauperism," by the Viscount de Bargemont. He had been prefect in several provinces of France, and was familiar with the subject. He informed the government of Louis Phillippe that there were so many thousands of people out of employment in the province of Lisle; and as that was general, if the government would not employ the people there would be a revolution, and there was. The government of Louis Phillippe was overthrown. In Europe this question is now well understood, but Europe is far behind this country in another form of this subject, education. The greater part, nearly the whole, of the paupers of Europe, are totally ignorant, and clearly that ignorance was one great cause why they could not find employment. When a man has nothing but his arms and legs to offer for service, with a mind almost totally blank, there is very little for him to do. He cannot enter upon any of the new employments which society is constantly creating, and the result is that when clear naked labor fails, he fails also. This form of pauperism has not yet very largely affected our country; but it certainly will, unless the laborers of this country shall be educated up to the point at which they shall be able to enter, at least as laborers, upon all the new channels of employment.

It is this question of education, as a *prevention* of pauperism, which concerns us here. Society has made and always will make ample provision for all those who are naturally disabled. Asylums for every species of infirmity are rising on all sides; but that sort of imbecility which arises from a total want of knowledge, or of discipline of mind, has no asylum but the almshouse. And there it reacts upon society in two ways—one by imposing upon society the necessity of supporting it; and the other by withdrawing so many persons and so much labor which might have been available both to subsistence and the increase of wealth.

These general views of pauperism are obviously true. Let us now see if specific facts do not correspond with and prove the general principles.

1. Let us first take up the statistics of Europe, as far as we can get them.

We cannot bring down the statistics to the present date; but, as the value of such facts depends only upon the *proportions* between the paupers, population, and education, they can be shown by any recent tables. We will first look at pauperism in Great Britain. Its condition in eighteen hundred and fifty-nine was thus:

Estimated population of England and Wales in 1859	19,578,000
Whole number of paupers	902,052
Per cent of paupers	4.6
Of these in union poorhouses	107,050
Of these, outdoor poor	692,384
Of these in hospitals, dispensaries, etc	102,618
In the City of London in 1859	106,140
Population of London	2,362,236
Per cent of paupers to population	4.7

The condition in eighteen hundred and sixty-seven was:

Estimated population of England and Wales	21,320,000
Whole number of paupers	931,546
Per cent of paupers to population	4.4

In the eight years from eighteen hundred and fifty-nine to eighteen hundred and sixty-seven, there was little variation in the proportion of paupers to population.

Pauperism seems to exist in Great Britain as a *permanent* disease of society, which includes and occupies (including all officers and attendants), just about five per cent of the whole population.

If we take with the general fact another one, what is the proportion of people educated in even reading and writing—the commonest of education—we should be able to draw some proportion as between Great Britain and other countries. But, in fact, the enlightened government of England does not exhibit such statistics, except in partial fractions. All that we have are:

In 1867 the number of inspected schools was	9,340
Number of pupils which could be accommodated	1,837,307

The population of the United Kingdom was then nearly thirty millions. But there were also great numbers of church schools, high schools, colleges, universities, etc., so that from these statements we cannot get an accurate idea of the education of Great Britain; but we get enough of facts to see that it is very defective; in fact, it cannot possibly reach more than half the people.

But the following paragraph from the statistics of the "Edinburgh Almanac" for eighteen hundred and sixty-nine sums up all the facts we can get there on the subject: "But according to the estimate of the Assistant Commissioners, the seventy schools from which returns were obtained supply instruction to more than two thirds of the middle class of population of the country. If this estimate be correct, there is one in every one hundred and forty of the population in Scotland on the roll of some secondary school; and there is one in every two hundred and five of the population in public secondary schools. In the universities and colleges there were one in one thousand."

But these were all of the secondary and higher class, and do not include the primary schools, which ought to have the great body of pupils. The report of eighteen hundred and fifty-one, which is sufficiently near to determine ratios, gives the following facts:

Number of pupils attending public schools of all kinds	280,045
Number attending private schools	88,472
Total	368,517
Proportion to population	1 to 7.84

In round numbers, Scotland, the *best educated country in Europe*, has in school one to eight. The State of Ohio has at any one time as many as one to three and a half of the people in course of education.

The proportion of popular education in Ohio to that of Scotland is more than two to one.

At the same period (eighteen hundred and fifty-one), there were in England:

In day schools	2,144,378
Population	16,921,888

This gives a ratio to population of one to eight.

It is slightly less, but we may suppose the ratio will be fully made out by the higher schools. The result of these statistics is, that in eighteen hundred and fifty-one the number of youth in the schools of Great Britain did not exceed half of those who ought to have been in such school.

Let us now, while we have these figures, compare them with similar results for Ohio. In his report for eighteen hundred and seventy-one, the Secretary of State of Ohio returned

five thousand six hundred paupers—that is, "indoor" poor in Ohio; sometimes there were in round numbers ten thousand "outdoor" poor in Cincinnati; and there were in Cleveland, Toledo, and other large towns, nearly or quite four thousand "outdoor" poor. The aggregate of these is twenty thousand of the same class of paupers which are returned in Great Britain. Then we have these general results:

Population of England and Wales in 1851	17,927,609
In school	1 in 8
Number of paupers	902,052
Per cent of paupers	4.6
Population of Ohio in 1870	2,665,000
In school	1 in 3.5
Per cent of paupers	.7

With double the proportion of education, the proportion of paupers in Ohio is only one sixth of that of England and Wales. If, then, all other conditions were the same, the conclusion is inevitable that universal education had reduced pauperism to one twelfth. But, undoubtedly, this is an exaggerated view of the subject, because the conditions are not the same. This is a new country, with political institutions adapted to develop the faculties of, and furnish employment to, the people. There is, however, an important view in which the conditions are nearer than might be supposed. Ohio has just *one third* of its population in cities and large towns; and England has little, if any, larger proportions, but it is the condition of these large towns which creates the great body of paupers. Hence the inequality of conditions is not so great as might be supposed. After allowing for all these inequalities, it is evident that the defect of education has had a great deal to do with the pauperism of England.

Let us now look at France. The returns of eighteen hundred and fifty-one will show the proportion, viz:

Population of France in 1851	35,781,628
Average number assisted	982,516
Per cent of paupers	2.78

This was the number aided among the *healthy* poor, but does not include the large mass of the sick and infirm poor, which make the full half of all paupers, in the infirmaries of the United States. We must, therefore, add them in. The statistics of these were:

Total number of hospitals and asylums in France in 1852	1,324
Number of beds in all	131,016

But this number was quadrupled by the discharge of the recovered and the entry of others. A greater part of these we have.

In one thousand and thirty-five of these institutions there were in eighteen hundred and fifty-three as follows:

Males	285,188
Females	162,885
Adults	404,447
Children	42,926

Making a proportion for the remaining institutions, we have at least five hundred and sixty thousand of the sick and infirm poor. Adding these to the healthy poor supported, we have:

Total number of paupers	1,542,516
Proportion to population	1 in 23

When we come to the ultimate, we find there is very little difference between the proportion of pauperism in England and France, but there is an immense difference between the proportion of pauperism there and in the United States. In the City of Paris the proportions were:

Population of Paris at that time	996,067
Paupers "indoor" and "outdoor"	95,169
Proportion of paupers in Paris	1 in 11
Per cent of paupers in France	4.3
Per cent of paupers in Paris	9.5

The proportion of pauperism in Paris is nearly double that in France generally, and that in the whole of France is double that in the State of Ohio. We may stop here for a moment to compare these proportions with those of Massachusetts. Here all conditions, except those of education, are nearly the same. Massachusetts has a *civic* (that is town) population equal to that of France; and a very large share of foreign emigrants. The comparison between France and Massachusetts is therefore quite fair.

Population of Massachusetts in 1852	1,040,000
Whole number of paupers in the State	31,400
Proportion of paupers to population	1 in 35
Percentage of paupers	3.5

Here we have a direct and fair comparison of the results in Europe compared with those of the United States, under nearly the same conditions:

Paupers in France	1 in 23
Paupers in Massachusetts	1 in 35
Per cent of paupers in France	4.3
Per cent of paupers in Massachusetts	3.5

Now, the difference is not so great as many might expect, but *all* that difference is due to education.

Return again to Ohio:

Proportion of paupers to population	1 in 35
Percentage of paupers	.7

Ohio is a fair representative State of this country. One third of its population is in large towns—a proportion not exceeded by more than three or four States in the whole country. Three fourths of all the States have a less proportion of paupers than Ohio. But, in order to put the case in the fairest possible attitude for Europe, let us combine the proportion of Massachusetts and Ohio together. The result will be this:

Population of Massachusetts and Ohio in 1852	3,030,000
Number of paupers	50,000
Proportion of paupers	1 in 61
Per cent of paupers	1.70

The proportion of paupers in France is more than double, and, as the civic population is as large, and the number of foreign immigrants of the poor classes very great, the comparison is a fair one; and the difference in the proportion of pauperism is undoubtedly due to education.

2. Let us now look at the statistics of the United States, and see if we can ascertain whether ignorance has caused pauperism.

In the table at the end of this report we have given the results which we have obtained by hundreds of inquiries addressed to the infirmaries and charitable institutions of the country, but which were not answered in more than one case out of three. There are still answers enough to give us a definite view of this subject and establish certain proportions which would not be varied materially by more extended observations; and here we remark that full and accurate statistics would enable us to establish definitely the principles or social influences by which "pauperism," that is, dependent poverty, is evolved from society. We see arising in our country, in a smaller degree, but with equal regularity and certainty, the same kind of pauperism which is one distinguishing mark of society in Europe. We are apt to think that England and France are the most civilized countries in the world; at least they are those from which we take our ideas of what is called "civilization." But what do we find in this civilization? Why, that in eighteen hundred and sixty-nine, there were in England and France together, two million six hundred thousand paupers out of a population of sixty-five millions! That is, one in twenty-five of the people is dependent upon public support. This is startling. It is enough to make any humane man—more, any Christian, and still more, any Christian statesman—pause and inquire whether this is really the necessary result of Christian civilization. But these are the countries to which we have looked for the highest standard of civilization. Here we inquire again, must our country follow this kind of civilization? Is there no remedy for this tremendous evil? At least, is there not a partial remedy, so that we may keep our country from advancing further in the scale of pauper civilization?

Let us now return to the results of our own tables:

Number of States reporting	16
Number of institutions reporting	276
Number of paupers reported	12,159
Number of white males	6,251
Number of white females	5,245
Number of colored males	287
Number of colored females	279
Number of foreign born	3,757
Number of native born	5,827
Number who can read and write	3,071
Number who can read only	1,521
Number who can neither read nor write	2,801

The proportions deduced from these aggregates as follows:

The proportion of males to females is	54 to 46
The proportion of white to colored is	95 to 5
The proportion of foreign born to native	40 to 60
The proportion of those who can read only, to those who can neither read nor write, is	52 to 48

If we add those who can read only to those who can do neither, which we should do, as it is well known that those who can read only are almost absolutely ignorant, we shall have this result:

Those who have some education to those who have none	60 to 40
Foreign born to native	39 to 61
Whites to blacks	95 to 5
Totally ignorant among paupers	60 per cent.
Foreign born	39 per cent.
Colored	5 per cent.

To compare these proportions with the proportions of these classes in the several States, we have these results, derived from the census of the illiterates in the census of eighteen hundred and seventy:

Adult illiterates in New England States to their total population	4.6 per cent.
In Pennsylvania, New Jersey, and New York	4.9 per cent.
In Ohio, Indiana, and the Central West	4.8 per cent.

This proportion is for the whole population, and not for adults only; in the latter the proportion of illiterates would be much greater. We may assume 4.5 per cent as the proportion of the illiterates in the Northern, Middle, and Western States, excluding the South, or former slave States. We have, then:

Totally ignorant among paupers	60 per cent.
Totally ignorant among the whole people	4.5 per cent.

Let us take a given number of people, say a million of persons, in Pennsylvania, Ohio, and Illinois, States not inferior to any in popular education. The result will be (on the average) very nearly this:

Population	1,000,000
Paupers	8,000
Illiterate people, (total)	45,000
Illiterate paupers	4,800
Of total illiterates there are paupers	13 per cent.
Of all population there are paupers	8 per cent.

In other words, the proportion of paupers among the illiterates is sixteen times as great as among those of common education. The results demonstrate what reason should infer from the facts. The want of education is the lack of faculties and talents to acquire employments and to work profitably in them; and this is one of the great causes of pauperism. Let us now look to the proportion of foreign born to native; for this is involved in an inquiry into the relations of ignorance to pauperism. A great many of the foreign born who come to this country, come very ignorant, and also very poor, so that they are in a condition to recruit the ranks of pauperism largely, unless they are able to get into agricultural employments, which only a small portion does. The result is evident in the pauperism of large cities. If the infirmaries, hospitals, and asylums of New York, Cincinnati, Saint

Louis, and other cities, be examined, it will be seen that by far the larger proportion of paupers is in the large towns, and that the greater part of them is foreign born. Taking the proportions above given, let us examine their relation to the whole population.

In Connecticut the proportion of foreign born is	21 per cent.
In Pennsylvania the proportion of foreign born is	15 per cent.
In Ohio the proportion of foreign born is	14 per cent.
In Indiana the proportion of foreign born is	8 per cent.
In Illinois the proportion of foreign born is	20 per cent.

In the whole United States the proportion is about twelve per cent, but in the South it is much less. In the States from which our tables are taken an average of sixteen per cent is quite enough. We have, then, for a given population, the following results:

Population	1,000,000
Paupers	8,000
Foreign born	160,000
Foreign born paupers (39 per cent)	3,120

Of all foreign born, there are paupers, two per cent.

Of the whole population, there are paupers, eight per cent. In other words, the proportion of foreign born paupers is three times as great as the proportion of natives.

The proportion of native paupers is as follows:

Native population, deducting foreign born, as above	840,000
Native paupers, as above	4,880
Proportion to whole population	5 per cent.
Proportion of foreign to native paupers	4 to 1

The number of colored paupers is not large (except in the South), and there is no evidence that they are more inclined to pauperism than the whites. The returns from several of the almshouses and infirmaries show that there is a large share of intemperance; but, as we have remarked in relation to crimes, intemperance is often the *consequence* as well as the cause of crime and pauperism. It is one of the common sayings of intemperate men, as well as their friends, that "he was unfortunate, and then got to drinking." We must go farther than we have yet been able to do, into the origin of cases of pauperism, before we can safely pronounce how far intemperance has caused it. We now know that the largest element of character which accompanies pauperism is *ignorance*. The proportions above given are enormous, and should arouse those who seek a broad, popular education, to greater zeal and energy.

Although the effect of ignorance in producing crime is very great, yet its effect in producing pauperism is greater. If, then, society has to pay so heavily for keeping a part of its people in ignorance, would it not be wise and prudent to educate them?

The State Commissioners of Public Charities in Illinois report the case so clearly and strongly that we make the following extracts from their report for eighteen hundred and seventy-one:

"Ninth—The tendency of education to prevent pauperism is more apparent than its tendency to prevent crime. Estimating the pauper children at one tenth of the whole number, and leaving them out of calculation, forty per cent of the inmates of the almshouses could not write, twenty-five per cent could not even read.

"Tenth—Pauperism and crime are so closely allied that the same individuals belong to both fraternities. Five per cent of the county paupers acknowledge to have been in jail. The same man is a criminal or pauper, according to circumstances. He steals when he cannot beg, and begs when he cannot steal."

Cicero, in his oration for the poet (Archias), says that all arts are kindred. We see above that the vices and crimes are kindred also; but whatever they *are*, society should rather inquire how they *came* than what they *are*. Vice, crime, and imbecility, when they have once seized upon a human being, are rarely cured. The preventive is a far more possible process than the curative; hence society is under the greatest obligations, as well as moved by the strongest interests, to take all possible preventive measures. It has two directly within its power. One is positive, by educating the people thoroughly. The other is negative, by withdrawing the open temptations to intemperance. Every Christian and patriotic motive impels us to *prevent* crime and pauperism by every human means.

The statistics from which we have drawn our conclusions are limited, compared with what they may be made; but while more extensive tables might enlarge the details, they would probably in no way change the result. While the great social facts remain, the evil, as well as the good, which attended them, will also remain.

CONDITION OF EDUCATION IN ALMSHOUSES AND INFIRMARIES.

Institutions or States.	Number of poor-houses.	Number of persons.	White.		Colored.		Nativity.		Education.		
			Males.	Females.	Males.	Females.	Foreign.	Native.	Read and write.	Read only.	None.
Connecticut	7	64	27	33	3	1	5	57	23	3	17
Maine	9	100	47	53	.....	.....	12	56	55	13	14
Massachusetts	33	754	404	337	2	11	128	612	338	118	84
New Hampshire	5	124	49	74	1	.....	20	104	75	15	34
Rhode Island	2	12	3	4	1	.....	.....	.....	7	2	3
New York	31	2,279	1,220	1,015	25	19	786	1,064	367	167	246
New Jersey	2	359	158	194	4	3	218	200	100	60	258
Ohio	23	1,410	680	626	53	51	316	845	520	276	457
Ohio, City of Cleveland.	1	465	257	208	5	2	333	132	300	102	158
Ohio, Erie County Infirmary	1	60	29	29	2	.....	40	18	.....	.....	.....
Ohio, Columbiana Co. Infirmary	1	84	39	43	2	.....	.....	.....	.....	.....	.....
Ohio, Toledo Infirmary	1	51	51	.....	.....	.....	.....	.....	20	.....	24
Ohio, Richland County Infirmary	1	73	27	46	.....	.....	20	53	36	14	13
Indiana	18	390	179	198	5	8	133	257	102	64	149
Illinois	28	746	392	346	4	4	327	397	132	128	52
Illinois almshouses	71	1,662	912	708	27	15	812	850	439	244	539
Michigan	10	263	156	94	9	4	50	96	14	25	79
Minnesota	1	76	47	23	1	5	60	16	.....	.....	.....
Pennsylvania	27	2,222	1,246	939	31	6	254	381	318	160	305
Maryland	1	571	205	246	39	81	200	371	195	108	237
Virginia	2	274	53	83	73	65	40	251	4	15	42
West Virginia	1	120	70	46	.....	4	53	67	26	7	95

THE SUPPORT OF OUR COMMON SCHOOLS.

The second question which claims our attention relates to the ways and means of providing for every district of the State sufficient and equal educational facilities.

In the summaries fronting the report it is shown that of the one thousand four hundred and sixty-two school districts in the State in eighteen hundred and seventy-three, only six hundred and thirty-seven districts, or 43.57 per cent, maintained public schools for eight months or more; and the remainder, eight hundred and twenty-five districts, or 56.43 per cent, maintained public schools for less than eight months. True, the six hundred and thirty-seven districts represent one hundred and six thousand two hundred and eight census children, or seventy-five per cent of all the census children in the State; whilst the eight hundred and twenty-five districts represent only thirty-five thousand four hundred and two children, or twenty-five per cent of the census children in the State. Yet this proves only the more clearly, as my predecessor already stated in his last biennial report, that "while in our centers of wealth and population the children have the advantage of a full year's instruction, with the best facilities for learning, truth compels the confession that for the more remote and sparsely settled districts of the

State our present system is wholly inadequate, and is but a pretense for popular education. Under the present system, many districts can maintain schools only from three to six months of the year. No one need be told that such fragmentary bits of instruction are only a little better than none at all. During these short school terms the pupils of such schools only get fairly started in their studies, to be turned out for the greater part of the year, forgetting what little they had learned, and then coming back after this long and ruinous interval to commence again at the former starting place, at the foot of the hill of knowledge, under a new teacher—the old one having sought a new place rather than attempt to live on the hope of another three or six months' school next year. This is but a sham, a waste of the public money, and a flagrant injustice towards a portion of the children of the State. There are many of these schools thus revolving year after year on the axis of a defective system, making some motion, but scarcely any real progress. In a State system of public instruction should not all the children be treated alike? As a good mother, she should dispense the blessings of education with an equal hand."

Our present system of common schools very forcibly illustrates that "whosoever hath, to him shall be given, and he shall have more abundance: but whosoever hath not, from him shall be taken away even that he hath." Yea, it goes further, it determines even when a district is to be thrust from without the pale of our common school system: for should the number of census children fall below a certain figure—twenty for some counties, up to as high as thirty for others—our present system does *not* provide funds enough to keep up and support in the district a school for at least three months in every year, the third section of the ninth article of the Constitution of California to the contrary notwithstanding. We have thus over a hundred districts in the State unjustly and unconstitutionally thrust from without the pale of our common school system. And this when in many counties the maximum rate allowed by law is levied for school purposes, and when in every county more than the minimum amount of the county school money is raised.

The inadequacy and disabilities of the school revenue law have never pressed more heavily upon our schools than at present. With our number of census children increased nearly nine per cent since eighteen hundred and seventy-one, the school funds provided by the State have increased only 1.5 per cent. In eighteen hundred and seventy-one the State apportioned three dollars and fifty-six cents to each census child, in eighteen hundred and seventy-three, only three dollars and eighteen cents, a decrease of thirty-eight cents per census child, or fifty-three thousand eight hundred and eleven dollars and eighty cents, if the State had desired to contribute to the support of the public schools as much in eighteen hundred and seventy-three as it contributed in eighteen hundred and seventy-one. If we compare the amounts actually raised for the support of our public schools in eighteen hundred and seventy-one and eighteen hundred and seventy-three, it will be seen that in eighteen hundred and seventy-one the State contributed 9.53 per cent more to their support than in eighteen hundred and seventy-three. For, of all the money raised for school purposes in eighteen hundred and seventy-one, the State contributed 22.47 per cent; in eighteen hundred and seventy-three, only 12.94 per cent. There is even a falling off of .95 per cent in the amounts raised from county taxes. And yet the people are

so much in earnest in their support of the public schools, that in eighteen hundred and seventy-three they voluntarily taxed themselves 10.48 per cent more than they did in eighteen hundred and seventy-one. The following table will show at a glance how much the State contributes towards the support of our common schools; how much the counties contribute, and how much is left to private liberality:

	1871.	1872.	1873.
Percentage of school funds from State apportionments	22.47	19.89	12.94
Percentage of school funds from county apportionments	47.21	46.38	46.26
Percentage of school funds from other sources	30.32	33.73	40.80
Amount of State apportionment per census child	3.56	3.30	3 18
Amount of county apportionment per census child	7.31	7.60	8.58
Amount from other sources per census child	4.69	5.53	6.86

Comment is unnecessary. And if we remember the lavishness, nay, prodigality, with which the State has endowed and supports the State University, we shall be able to excuse the chagrin, the righteous indignation of all true friends of popular education when speaking of the parsimony with which the State supports our public schools.

The Legislature of eighteen hundred and sixty-nine and eighteen hundred and seventy was the first to attempt to provide for every district having more than twenty-five census children and seventy-five thousand dollars worth of taxable property, sufficient funds to keep up and support an eight months' school. The annual ad valorem tax was raised from eight cents to ten cents on each one hundred dollars' value of all taxable property throughout the State. Then the following provisions were added to the law:

SEC. 98. The County Superintendent in each county shall, on or before the first day of March in each year, furnish to the Board of Supervisors and Tax Collector, respectively, an estimate, in writing, of the cost of maintaining a free school for eight months in each school district in the county, together with the cost of incidental expenses and necessary repairs; and also an estimate of the amount of public money, both State and county, to which each district will be entitled during the year, and the amount necessary to be raised in each school district to support a school eight months.

SEC. 99. The Board of Supervisors in each county shall, after receiving the assessment roll from the County Assessor, and before the first Monday in September of each year, levy a special school tax upon the property in each school district in which there shall be a deficiency, as shown by the written statement of the County Superintendent, for an amount which, together with the State and county money to be received, shall be sufficient to maintain the school (or schools) for eight months during the year; and said tax shall be equalized and collected in the manner provided for equalizing and collecting State and county taxes. The Collector shall pay over the money so collected to the County Treasurer, who shall place it to the credit of the respective districts from which it shall be collected, as a special deposit, and pay it out on the warrant of the County Superintendent in the manner provided for the payment of State and county school money.

SEC. 100. Any school district whose taxable property does not exceed seventy-five thousand dollars, and containing not more than twenty-five children between the ages of five and fifteen years, shall, on a proper showing of the facts, be exempted from the requirement to maintain a free school eight months.

This law remained in most counties a dead letter, on account of its defects in defining with sufficient clearness the duties and the penalties incurred by a neglect of duty, of the several officers required to execute it. The law was always considered inadequate to the accomplishment of its intended purpose. It was found that its rigid execution

would entail such an oppressive taxation as to overtax the resources of the very districts designed to be specially benefited by the law. Hence in several counties the Board of Supervisors point-blank refused to levy the special tax. The people acquiesced, and looked to the Legislature of eighteen hundred and seventy-one and eighteen hundred and seventy-two for relief. But in vain; at the close of the legislative session it was discovered that instead of additional revenues, the former revenues of the schools were materially curtailed. Instead of a ten cent ad valorem tax, only two hundred and forty thousand dollars were granted for the support of the public schools. Still the Legislature had remedied the defects of the special school tax law, above quoted; and though the tax would be a grievous burden to many districts, it was preferable to the alternative or either closing school, or of supporting the schools by voting a tax, the most vexatious and expensive mode of raising school funds. Hence, in October, eighteen hundred and seventy-two, the Boards of Supervisors throughout the State levied the special tax as required by law. But before the tax could be generally collected, the Supreme Court delivered an opinion declaring unconstitutional any law providing for the collection of a district tax resting upon an assessment not made by an Assessor elected by the qualified electors of the district where the property assessed is situated. Of course such a decision decided the unconstitutionality of the special school tax law. The State Board of Equalization immediately issued instructions to the County Assessors throughout the State, directing them to desist from collecting and assessing the special school tax. In accordance with these instructions, no special taxes were levied this year, eighteen hundred and seventy-three, and those levied last year, if unpaid, or paid under protest at the time of the delivery of the above referred to decision of the Supreme Court, were remitted. This worked serious hardships last year. For in many counties the Board of Supervisors, unable to shirk the disagreeable duty of levying the special tax, made it as onerous as possible, by reducing the rate of the county school tax, in some instances even below the legal minimum, thereby unnecessarily increasing the amount to be raised by special tax. This year better counsels have prevailed, and an increased rate of tax for county school purposes somewhat compensates for the total loss of the special tax and the ever diminishing amount per census child derived from the State apportionments.

As the school law stands at present, our public schools derive their funds, first from State apportionments, the amounts of which per census child are decreasing in proportion to the increase in the number of census children; secondly, from county apportionments, yielding in many counties the largest amounts which the law allows or the people well can bear; third, from special taxes voted by the district. From the expensiveness of first voting such special taxes and afterwards collecting them, districts, except when desirous of building school houses, are very loath to avail themselves of this provision of the law.

Our public schools stand thus where they stood at the beginning of the session of the Legislature in eighteen hundred and sixty-nine. And the same demand then made is made of the Legislature to convene in December, eighteen hundred and seventy-three: sufficient and equal school facilities for every district of the State, small or large, rich or poor, situated in the centers of wealth and population, or in the frontier and the thinly settled portions of our State.

districts which, with the present levies for school purposes, have abundant means to maintain an eight months, yes, a ten months school, every year. The law is not so much inadequate as discriminating; discriminating most unjustly against the thinly populated districts of the State. The law is faulty, not so much primarily, by not providing sufficient funds, as by not providing for an equitable apportioning of the funds. At present, the State and county school funds are apportioned to the school districts, not in proportion to the needs of each district, but in proportion to the number of census children. The number of census children belonging to a district determines the amount of funds apportioned to the district; but, within a certain limit, the number of census children does *not* determine the expenses of maintaining a public school. Thus one district may have fifteen census children, another fifty; still the same amount is needed by each district to maintain a school for a definite length of time. Yet the former district may not obtain enough funds for a three months school, while the latter district perhaps receives enough funds for an eight months school. To give a specific example: In Solano County, where the total amount per census child of State and county school funds was last year in round figures sixteen dollars, a district with fifteen census children received two hundred and forty dollars—just enough for a four months school, if the money was used exclusively for the payment of the teacher's salary, and this salary did not exceed sixty dollars per month. The district having fifty children received eight hundred dollars—sufficient for an eight months, yes, a ten months school, besides enabling the district to employ a better teacher by paying a better salary, to make some repairs and improvements, or to make some additions to the apparatus or the library, if needed—things which were placed within the reach of the former district only by means of voting a special tax. In short, the longest terms, the best schools, the best teachers, the best and most complete furniture, apparatus, and library, are given to the district having a sufficient number of census children; whilst a district wanting these is proportionally curtailed in its educational facilities. Now, except there is an inherent right in numbers to warrant it, such discrimination is a blot upon our school system, and should, if possible, immediately be removed, or our system fails in the object by reason of which alone it can claim our recognition and support: the free and equal education of *all* the children of the State, irrespective of the standing in society, or the residence, of their parents.

On first sight, it might seem that increased taxation would be the most expeditious way of finding an adequate remedy. Let us see. In order to agree upon the end in view, let us assume that an eight months school for every district, irrespective of its number of census children, is the desideratum. It is plain if we obtain funds sufficient for a district having the minimum number of census children, we shall have sufficient funds for every district. No minimum number of census children has been established by law; let us, therefore, assume fifteen to be the minimum number, although there are quite a number of districts having less than fifteen children, and there is one district which has only *one* child. In the summaries, fronting the report, six hundred and ninety-nine dollars is given as the average amount needed for an eight months school, for every teacher employed. For large districts, maintaining first grade schools, this average is below the amount needed; but for a district with fifteen children, it is most likely in excess of the amount needed. Let us assume, then, that a teacher is engaged for sixty dollars per month, we need four hundred and eighty dollars for salary; add twenty dollars

for fuel, repairs, stationery, and Library Fund deducted from State apportionments, and we have five hundred dollars needed by the district to maintain an eight months school. It may be here remarked, parenthetically, that throughout this whole article, five hundred dollars is assumed to be the amount needed for an eight months school, for every teacher employed. In order, then, to give a district having fifteen children five hundred dollars, we must apportion nearly thirty-four dollars per census child, which means that we must raise by county and State taxation nearly five million dollars, exclusive of what may be needed for building purposes! (1) Now, even if the attempt to raise such a sum were not preposterous, the larger districts, that is, those having more than fifteen census children, would be surfeited with funds. A city like Oakland would receive one hundred and two thousand dollars—forty-three thousand four hundred and two dollars more than it expended last year for a ten months school. We must, therefore, abandon the idea that we can increase the State and County School Funds sufficiently, that, when they are apportioned to the several districts in proportion to the number of census children, each district will receive even only the minimum amount, five hundred dollars, needed for an eight months school.

It was shown above that, within certain limits, the expenses of maintaining a school a stated length of time are the same, be the district large or small. This will furnish us with a data for devising a method of apportioning school funds by which all districts may have equal school facilities, without the necessity of levying excessive taxes. In other words, if we determine once the limits between which the expenses of maintaining a school are the same, irrespective of the number of census children in the several districts, we have the data necessary for devising a proper method of apportioning school funds.

How can we determine these limits? The number of census children belonging to a district do *not* determine the expenditures for school purposes. The average number attending the schools of the district determine the number of teachers needed, and the number of teachers determine the expenditures. A district having from four to five hundred census children, may have an average attendance at school of only forty, and need the services of only one teacher; whilst another district, with only half or less the number of census children, may have an average attendance at school which necessitates the employment of two or even three teachers. Such cases are not mere suppositious, but they are *real.* One district of the first kind, had thus accumulated several thousand dollars, which were lying idle in the treasury, whilst every other district in the county had to close its school for want of funds.

But it would be inconvenient to make the average attendance at school the basis of apportioning school funds. It is preferable, for various reasons, to still apportion according to the number of census children, but not in proportion to the number, but taking as basis *the number of census children represented by the average attendance at school.* Except as between counties in apportioning the State School Fund—for, as in no county the average attendance, nor even the total number enrolled, equals, much less exceeds, the total number of census children, it would be an injustice against those counties which, as it is,

(1) In San Francisco, thirty-five dollars to each pupil, on average attendance of preceding year, was raised by city taxation.

contribute more towards the State School Fund than they receive in apportionments, to lessen their receipts by abandoning the present method of apportioning. This may not seem clear on first thought; but the fact is—no matter how accounted for—that the average attendance is less than the number of census children, in proportion to the density of population and the length of school terms. Such a county as San Francisco would lose nearly five per cent by having the proposed method substituted for the present method, in apportioning the State School Fund between the counties. The proposed method of apportioning must therefore be applied only to the districts of a county.

It is shown, in the introductory summaries, that the average number of census children belonging to public schools is 50.26 per cent on the total number of census children. If we include, as we should—for we must provide for their education also—the number of children over fifteen years of age who attend public schools, the percentage of the average attendance is only very slightly increased, being even now but 55.36. For every one hundred census children, then, belonging to a district, only fifty-five children attend school; a number perhaps a little large for one teacher, but certainly too small for two teachers. But should a district have over one hundred, up to two hundred census children, the average number belonging would necessitate the employment of at least two teachers. As a *general* rule, it may be safely laid down, that for every additional one hundred census children belonging to a district, an additional teacher must be employed. That this rule will not work in every case will be evident; for in every district the percentage of the average number belonging is not as low as the average percentage of the whole State. And then in the larger cities, the special teachers of music, drawing, penmanship, and phonography, the supervising teachers, and teachers of evening schools, added to the number of regular teachers in charge of classes, may change the number of teachers from one to two for one hundred census children. (In San Francisco, one teacher is employed for every sixty-eight census children; in Oakland, one teacher for every fifty-five census children; for the whole State, one teacher for every sixty-five census children.)

Thus it may be, that for some districts, and especially for the larger incorporated towns and cities having Boards of Education, one teacher must be reckoned for every sixty-eight or less of census children; but if sixty-eight or even seventy-five were adopted as the basis upon which to calculate the number of teachers to be reckoned to each district, I have found from an actual and thorough examination of the reports for eighteen hundred and seventy-three, that the number of districts which would receive the number of teachers actually employed by them, would be far over-balanced by the number of districts which would receive an allowance of teachers in excess of the number at present employed by them. And this, as will soon be clear, at the expense of the larger districts.

The proposed method of apportioning State and county school funds is, then, that for every hundred census children or fraction thereof, one teacher be allowed to a district, and for every teacher a certain amount of school funds. As an illustration, let us take Alameda County. Alameda District having four hundred and five census children, will be entitled to five teachers, viz: one for each one hundred children, and one for five children, as a fraction of one hundred children. Below, a complete table for the whole county is given. In the first column are given the names of the districts; in the second column, the number of

census children in each district; in the third column, the number of teachers each district will be entitled to according to the proposed method of apportioning school moneys; in the fourth column are given the amounts which each district is entitled to according to the present method of apportioning; and the fifth column gives the amount each district will receive according to the proposed method of apportioning.

TABLE II.

NAMES OF DISTRICTS.	Number of census children in district	Number of teachers to district	Amount according to present method of apportioning	Amount according to proposed method of apportioning
Alameda	405	5	$1,215	$1,160
Alvarado	134	2	402	464
Alviso	82	1	246	232
Bay	58	1	174	232
Castro Valley	51	1	153	232
Centreville	106	2	318	464
Cosmopolitan	64	1	192	232
Eden Vale	52	1	156	232
Eureka	116	2	348	464
Fruit Vale	109	2	327	464
Inman	63	1	189	232
Laurel	289	3	567	696
Lincoln	29	1	87	232
Livermore	168	2	504	464
Lockwood	72	1	216	232
May	75	1	225	232
*Mission San José	87	1	261	232
Mountain House	61	1	183	232
Mowrey's Landing	46	1	138	232
Murray	44	1	132	232
Oakland	3,006	31	9,018	7,192
Ocean View	128	2	384	464
Palmyra	40	1	120	232
Peralta	149	2	447	464
Pleasanton	132	2	396	464
Redwood	32	1	96	232
San Lorenzo	163	2	489	464
Stony Brook	18	1	54	232
Suñol	61	1	183	232
Summit	37	1	111	232
Temescal	142	2	426	464
Townsend	69	1	207	232
Vallecito	72	1	216	232
Washington	109	2	327	464
Warm Springs	75	1	225	232
Union	401	5	1,203	1,160
Totals	6,751	87	$20,253	$20,184†

*Midway, a district lying partly in Alameda County and partly in San Joaquin County, is excluded from the above. It reports six census children belonging to Alameda County.

†The balance, sixty-nine dollars, unapportioned, remains in the Treasury, and is to be added to the next State apportionment.

Every State apportionment received by Alameda County will have to be divided by eighty-seven, the total number of teachers according to the proposed method of apportioning. Assuming that Alameda County receives from State apportionments three dollars per census child (the probable amount for eighteen hundred and seventy-four), it will have twenty thousand two hundred and fifty-three dollars to apportion among its districts. According to the present method of apportioning, each district would receive three dollars for every census child; according to the proposed method, every district will receive two hundred and thirty-two dollars (20,253÷87=232) for every teacher assigned it. Thus Stony Brook District, which by the present method receives from State and county apportionments combined, only about one hundred and fifty-seven dollars and fifty cents, not enough for a three months school, will receive, by the proposed method, two hundred and thirty-two dollars from the State alone, enough for nearly a four months school. Of course, some of the more populous districts will lose in proportion as the smaller districts gain; and from the above table it will be seen that every district having seventy-seven children or less, or a multiple thereof, gains, and the other districts lose proportionally. If it be objected that this works an injustice against the larger districts, the answer is, first, that a district does not necessarily contribute in taxes toward the School Fund in proportion to its number of census children; from Table I (*supra*) it will be seen that Colusa County contributes more in taxes to the School Fund than Contra Costa County, and yet the former receives less from the apportionments than the latter; in other words, Colusa County, with a larger assessment roll but smaller school population, contributes more to and receives less from the school fund, than Contra Costa County, which has a smaller assessment roll, but a larger school population. The same is more strikingly exhibited between the Counties of Napa and Nevada, both of which contribute almost equally to the State School Fund, yet the latter, on account of its larger school population, receives twice as much from the State apportionments as the former. And what is true between counties, may also be true between districts. Secondly, our whole State school system is based upon the theory that the richer and more populous counties may be taxed for the benefit of the poorer and more thinly settled counties. If we admit that the distribution of school funds between the districts must proceed upon the principle that the apportionments must be in proportion to the proceeds of local taxation, the same principle must be applied to the distribution of school funds between counties, and a State school system becomes then impossible.

It must not be concluded that because in Alameda County each district will receive, by the proposed method of apportioning, two hundred and thirty-two dollars for every teacher assigned, that this is the rate for the whole State. In Table III, given below, is given the rate for each county. In Mono County the rate is as low as sixty-seven dollars; in only one county (Santa Barbara) is it higher than in Alameda County.

But even this rate is not high enough to supply sufficient funds for an eight months school. It was above stated that five hundred dollars must be considered as the minimum amount necessary for this. In Alameda County, then, additional funds of two hundred and sixty-eight dollars must be provided for each teacher assigned to a district. If, for a moment, we assume that this amount must be raised solely from the County School Fund, it would seem that we simply have to take 87× 268=$23,316 from the County Fund, and apportion this among the dis-

tricts according to the proposed method of apportioning State school funds. Further on I shall show that only 87×221=$19,227 will be actually necessary in order to give each district enough county funds, which, together with the State fund, will make up the five hundred dollars required for every teacher. But this reduction from two hundred and sixty-eight dollars to two hundred and twenty-one dollars, is only possible because Alameda County has a County School Fund of at least twenty-three thousand three hundred and sixteen dollars. It had, in fact, for eighteen hundred and seventy-three, and for six thousand four hundred and ninety-six census children, a School Fund of thirty-seven thousand three hundred and fifty-two dollars. Assuming that the County School Fund for eighteen hundred and seventy-four will not be less, enough funds will be left on hand after deducting nineteen thousand two hundred and twenty-seven dollars, to admit of a *pro rata* apportionment of two dollars and sixty-eight cents per census child. This *pro rata* apportionment of two dollars and sixty-eight cents, and the two hundred and twenty-one dollars to each district for every teacher, amount to two hundred and sixty-nine dollars, the amount required to be obtained from the county fund for every district having one teacher. Let us take the smallest district in the county, Stony Brook District. It receives first, two hundred and twenty-one dollars; add to this 18× 2.68=48.24, total, two hundred and sixty-nine dollars; which, added to the State apportionment, two hundred and thirty-two dollars, gives the district five hundred and one dollars, one dollar more than the required amount.

If we had given every district in the county two hundred and sixty-eight dollars of county school funds for every teacher, there would still be a balance on hand of fourteen thousand and thirty-six dollars, which, divided among the districts in proportion to the census children, would give each census child nearly two dollars and eight cents. Stony Brook District would then have received 18×2 08=$37 44 more than the proposed five hundred dollars. It is plain, therefore, that Stony Brook District, and with it every other district of the county, did not need but 268—37=$231. But, as a decrease in the amount apportioned absolutely to the different districts increases the balance on hand, an increased *pro rata* apportionment is the result; and Stony Brook District would then receive 231+ (18×2 55) =$276 90—eight dollars and ninety cents more than the needed complement. Stony Brook District would need a complement from the County Fund of not more than 231—9=$222. A decrease in the complement producing an increase of the balance, and a consequent increase of the *pro rata* apportionment, even two hundred and twenty-two dollars are not needed by Stony Brook District; I have found that two hundred and twenty-one dollars, and a *pro rata* apportionment of two dollars and sixty-eight cents, will give Stony Brook District the required complement of two hundred and sixty-eight dollars County School Fund. Of course, for every district having more than eighteen census children, even two hundred and twenty-one dollars are not needed; but, as a less sum would not suffice for Stony Brook District, we must consider two hundred and twenty-one dollars as the minimum amount. Besides, an increase in census children produces an increased attendance, and this again an increased expenditure for school purposes; the larger districts should receive more school funds than the smaller districts.

It is evident that the original complement, two hundred and sixty-eight dollars, could not have been reduced, if, after deducting from the County School Fund twenty-three thousand three hundred and sixteen dollars, the amount required to give two hundred and sixty-eight dollars to each district for each teacher assigned it, no balance had remained on hand, which, by being apportioned in proportion to the number of census children, would give each district some funds, in addition to any absolute apportionment. Hence my statement above, that a reduction of the absolute apportionment (that is, the amount given to each district for every one hundred census children, or fraction thereof) is not possible, except Alameda County has a County School Fund of at least twenty-three thousand three hundred and sixteen dollars. Now, in some twenty-four counties, the County School Funds are not large enough to give each district the amount of county money needed to complement the State school money, much less to leave a balance on hand, which would reduce that complement.

The following table will make this plain:

TABLE III.

COUNTIES.	Number of census children	Number of Teachers assigned	Amount per Teacher from State School Fund	Amount per Teacher to be obtained from County Fund	Residual pro rata apportionment of County Funds	Deficiency	Rate of County School Tax levied in 1873	Amount County Fund per census child, apportionment of 1873
Alameda	6,751	87	$232	$268	$2 00	.....	10c.	$5 75
Alpine	113	4	84	416	3 00	.....	25	19 48
Amador	2,134	37	173	327	Insufficient	$175	30	5 69
Butte	3,707	55	148	352	Insufficient	4,836	15	5 54
Calaveras	2,215	41	162	338	Insufficient	4,460	35	4 17
Colusa	1,686	40	126	374	Insufficient	4,496	10	6 41
Contra Costa	2,603	44	177	323	Insufficient	2,889	10	4 59
Del Norte	348	8	130	370	Insufficient	59	25	9 21
El Dorado	2,304	45	153	347	Insufficient	7,428	25	3 15
Fresno	1,055	23	137	363	3 00	.....	20	12 37
Humboldt	2,059	37	166	334	Insufficient	3,342	15	4 65
Inyo	294	7	126	374	5 00	.....	20	16 25
Kern	614	11	167	333	5 00	.....	25	14 96
Klamath	276	5	166	334	3 00	.....	17.8	9 89
Lake	1,021	23	133	367	Insufficient	3,641	18	4 80
Lassen	554	12	138	362	Insufficient	2,247	24	4 97
Los Angeles	6,101	80	228	272	1 00	.....	25	4 71
Marin	1,410	28	151	349	2 00	.....	04	8 87
Mariposa	956	15	191	309	0 50	.....	35	5 97
Mendocino	2,407	48	150	350	Insufficient	6,110	15	.....
Merced	927	21	132	368	6 00	.....	20	15 88
Mono	90	4	67	432	Insufficient	256	25	17 72
Monterey	3,643	56	195	305	0 50	.....	14	5 39
Napa	2,109	45	140	360	Insufficient	939	15	7 38
Nevada	4,154	63	197	303	4 00	.....	30	9 02
Placer	2,166	47	138	362	Insufficient	1,529	10	6 94
Plumas	761	24	95	405	Insufficient	2,468	50	10 36
Sacramento	5,425	88	184	316	4 00	.....	06	9 03
San Bernardino	1,562	25	187	313	Insufficient	1,833	35	3 78
San Diego	1,297	24	162	338	1 00	.....	20	6 80
San Francisco	34,469	.....	.....	.....	.....	.....	25	35 00
San Joaquin	4,609	88	157	343	1 00	.....	14	7 40
San Luis Obispo	1,633	26	188	312	Insufficient	1,233	13	4 90
San Mateo	1,978	29	204	296	3 00	.....	11	7 62
Santa Barbara	1,706	20	259	241	1 50	.....	14	3 27
Santa Clara	6,762	94	215	285	0 75	.....	08	4 58
Santa Cruz	2,677	41	195	305	3 00	.....	25	8 33
Shasta	1,327	29	137	363	Insufficient	3,330	35	5 63
Sierra	980	23	127	373	Insufficient	712	20	7 79
Siskiyou	2,400	56	128	372	Insufficient	2,157	35	9 63
Solano	3,716	61	182	318	6 00	.....	35	11 74
Sonoma	5,899	109	162	338	0 33	.....	18	6 26
Stanislaus	1,712	38	135	365	4 00	.....	25	12 98
Sutter	1,290	36	107	393	Insufficient	7,148	13	5 33
Tehama	1,194	23	155	345	Insufficient	456	20	6 51
Trinity	530	10	159	341	1 50	.....	25	8 43
Tulare	1,751	32	164	336	1 33	.....	35	8 41
Tuolumne	1,794	29	185	315	Insufficient	1,113	35	4 19
Ventura	937	15	187	313	Insufficient	465	.....	.....
Yolo	2,119	47	135	365	0 80	.....	13	5 90
Yuba	2,385	42	170	330	0 20	.....	17	9 00

The first column gives the number of census children for each county; the second column gives the number of teachers assigned each county, in the same manner as eighty-seven teachers were assigned to Alameda County (Table II). The number of teachers gives the divisor by which each State apportionment made to the county must be divided, and the quotient, given in the third column, is the amount to be given to each district for every teacher assigned it. Thus, assuming that a State apportionment of three dollars per census child has been declared, Alpine County would receive three hundred and thirty-nine dollars, which would have to be divided by four, giving eighty-four dollars as the amount per teacher for every district in the county. In the fifth column is given the amount per teacher to be apportioned to each district from the County School Fund, which added to the State apportionment, will give the required five hundred dollars.

In the case of Alameda County it was shown that after apportioning from the County Fund to each district two hundred and sixty-eight dollars for each teacher, a balance remained on hand which, if apportioned among the districts in proportion to the number of census children, would give a *pro rata* apportionment of over two dollars per census child. In Alpine County, after apportioning to each district four hundred and sixteen dollars for every teacher, there still remains on hand a balance, which, apportioned *pro rata*, will give each census child three dollars. These *pro rata* apportionments are given in the sixth column. Against some counties is marked "insufficient." Let us consider the first case occurring in the table—Amador County. The amount necessary to be apportioned to each district from the County Fund is three hundred and fifty-two dollars per teacher, or a total for the county of nineteen thousand three hundred and sixty dollars. Now, this is one hundred and seventy-five dollars less than the total amount of county school funds received last year; so that the County School Fund is insufficient by one hundred and seventy-five dollars, to give each district the amount needed per teacher, which, added to the State apportionment, would give the required five hundred dollars. This insufficiency of the County School Fund is still greater for Butte County, where it amounts to four thousand eight hundred and thirty-six dollars (see the seventh column); in El Dorado County it is greatest, amounting to seven thousand four hundred and twenty-eight dollars.

Let us now examine how far this insufficiency can be remedied by increasing the rate of county tax to the maximum—thirty-five cents—for those counties where the maximum is not already levied. In the eighth column (Table III) is given for each county the rate of county school tax levied for eighteen hundred and seventy-three; in the ninth column the amount of county funds apportioned per census child in eighteen hundred and seventy-three.

The second column of Table IV (*infra*) shows the maximum amount which can be raised in the several counties under the present law. The amount is determined by levying thirty-five cents (the maximum rate allowed by law) on each one hundred dollars of the equalized value of the last (eighteen hundred and seventy-three) general assessment roll, after deducting fifteen per cent therefrom for probable delinquencies. Thus in Amador County, two million seven hundred and thirty-eight thousand seven hundred and seventy dollars is this year's equalized assessment roll; deduct fifteen per cent, and the remainder, two million three hundred and twenty-seven thousand nine hundred and fifty-five dollars, will give us, at thirty-five cents on each one hundred dollars,

eight thousand one hundred and forty-eight dollars as the probable amount to be received from general county taxes. Add four thousand six hundred and eighty-three dollars, received last year from poll taxes, etc., and we have twelve thousand eight hundred and thirty-one as the probable amount of county school moneys which can be raised if the maximum rate of tax is levied for county school purposes.

The third column shows the amount of poll taxes, etc., paid into the School Fund of each county. This amount is found as follows: After deducting the actual delinquency, as shown by the Controller's books, from last year's (eighteen hundred and seventy-two) general assessment roll, the amount is found which must have been paid into the School Fund, according to the rate of tax levied. (Table III, eighth column.) This amount is deducted from the total amount apportioned from the county school funds, and the remainder must have been received from poll taxes, etc. Thus in Amador County, last year's equalized assessment roll was three million one hundred and eighty-six thousand and seven hundred and fifty dollars. The actual delinquency, according to the Controller's returns, was seven hundred and seventy-three thousand dollars, leaving two million four hundred and thirteen thousand seven hundred and fifty dollars as the amount on which taxes were collected. Thirty cents was the rate of the tax levied for school purposes; giving seven thousand two hundred and forty-one dollars as the sum of county school moneys received from the general taxes. The total apportionment of county school moneys was eleven thousand nine hundred and twenty-four dollars, leaving four thousand six hundred and eighty-three dollars as the amount received from poll taxes, etc.

The fourth column shows the amount needed by each county, in order to give each district the complement of county school money needed, according to the fifth column of Table III. Thus in Amador County, each district will receive for every teacher one hundred and seventy-three dollars from the State; three hundred and twenty-seven dollars per teacher of county school money are needed for each district, in order to give it five hundred dollars per teacher. For the whole county we thus need twelve thousand and ninety-nine dollars.

For El Dorado County thirteen thousand eight hundred and fifty-eight dollars are needed. But the total probable amount of county school funds, the maximum rate allowed by law being levied for school purposes, is only nine thousand four hundred and seventy-eight dollars, leaving thus an "insufficiency" of four thousand four hundred and eighty dollars. In other words, El Dorado County, after receiving from the State six thousand nine hundred and twelve dollars (the probable amount of the State apportionments for eighteen hundred and seventy-three and eighteen hundred and seventy-four, as already stated above), and from the county nine thousand four hundred and seventy-eight dollars, the maximum amount which can possibly be raised, still needs a balance of four thousand four hundred and eighty dollars, in order to have money enough, which, when apportioned according to the proposed method, will give each district five hundred dollars for every teacher assigned it. The same occurs in some other counties, as will be seen by referring to the fifth column of Table IV.

TABLE IV.

COUNTIES.	Amount received from county tax.....	Amount received from poll taxes and other sources.....	Amount needed.	Balance.	Additional funds needed per census child..
Amador	$8,148	$4,683	$12,099	.....	.....
Butte	23,185	3,224	19,360	.....	.....
Calaveras	4,286	5,192	13,858	$4,480	$2 00
Colusa	22,622	2,403	14,960	.....	.....
Contra Costa	20,873	4,842	14,212	.....	.....
Del Norte	1,883	1,223	2,960	.....	.....
El Dorado	6,299	2,880	15,615	6,436	2 79
Humboldt	11,439	2,617	12,358	.....	.....
Lake	4,970	2,205	8,441	1,266	1 24
Lassen	3,610	187	4,344	547	1 00
Mendocino	15,055	3,487	16,800	.....	.....
Mono	1,351	478	1,728	.....	.....
Napa	22,553	3,843	16,200	.....	.....
Placer	21,258	10,374	17,014	.....	.....
Plumas	5,258	1,067	9,720	3,395	4 47 (1 50)
San Bernardino	4,200	1,559	7,825	2,066	1 32
San Luis Obispo	10,896	2,218	8,112	.....	.....
Shasta	5,353	2,179	10,527	2,995	2 25
Sierra	5,999	3,837	8,579	.....	.....
Siskiyou	10,983	9,800	20,832	49	.....
Sutter	12,430	1,245	14,148	473	0 37
Tehama	10,226	?	.....	.....	.....
Tuolumne	3,967	3,594	9,135	1,574	0 87

To summarize: the amount at present derived from the State School Fund, together with the maximum amount of County School Fund which can possibly be raised, is not sufficient to give each district of the State sufficient funds to maintain an eight months school, even when putting the expenditures at a minimum. It need hardly be stated that the maximum rate to be levied by a county for school purposes cannot be raised; the maximum is too high as it is for many counties, especially for most mining counties, in some of which the people are now so overtaxed as to demand relief from the State.

It need also hardly be stated that the amount of School Fund derived from the State apportionments, is far too small. The inadequacy of the State school revenue has always been admitted: and never more so than two years ago and at present. Almost every County Superintendent draws attention to it in his report; and if a friend of popular education is asked what are the most pressing wants of our public schools, the answer is: "Three things; first, money; second, *money;* and third, MONEY." Though above I waived, for the moment, the considering of the inadequacy of the school revenue law, it was simply to show its full measure. How great the inadequacy is, may be seen from the fact that in Calaveras County at least two dollars per census child additional funds are needed. Yes, in Plumas County, four dollars and forty-seven cents per census child are needed. But if we permit Plumas County to levy a county tax of fifty cents for every one hundred dollars of tax-

able property in the county (as it now does by virtue of a special law) it will still need one dollar and fifty cents per census child.

And except we return to the old plan of an *ad valorem* tax on each one hundred dollars value of all taxable property throughout the State, and raise this *ad valorem* tax to twelve cents, we shall never be able to fully remedy the inadequacy of the school revenue law. Even when the State tax is fixed at twelve cents, some counties will have a deficiency of funds, except they are compelled by law to levy the maximum rate; and even then there will be likely a deficiency in one or two counties.

How to remedy the *disabilities* of the school revenue law has been shown above, *in extenso*. To take a step forward, to establish a true system of popular education, *to educate all the children of the State*, we must have sufficient revenue so that every district in the State, whether situated in the most impoverished county, or in the most opulent city, has sufficient funds for an eight months school. Anything short of this is but a pretense of popular education. But for this the funds will never be sufficient except they are equitably distributed.

To insure, then, a thorough instead of a partial public school system, we need, first, a State tax of at least twelve cents on every one hundred dollars of all the taxable property of the State; secondly, the State and County School Funds must be apportioned, not as at present, in proportion to the number of census children belonging to a district, but in proportion to the number of times a district has one hundred census children, or a fraction thereof. There must be no aristocracy of *numbers*, as well as no aristocracy of territory or property. All the property of the State or county must be taxed to educate all the children of the State or county, and not merely the children of districts having a certain number of census children.

Before submitting a draft of a school revenue law which will remedy the inadequacy and disabilities of the present law, it will not be amiss to give a table showing the amounts of State and county funds to be apportioned to each district for every teacher assigned it, in case the Legislature of eighteen hundred and seventy-three and eighteen hundred and seventy-four should legislate in accordance with what I have shown to be the needs of our schools. I may first, however, parenthetically, answer a question which naturally has been asked by many of my readers, viz: Why do I insist in "assigning" teachers to a district; why not take the actual number at present employed by the districts? The answer is, that in the latter case a district would naturally suppose that its receipts would be in proportion to its number of teachers, and many districts would immediately clamor for additional teachers, and thus an element of strife would be introduced, which, if not defeating the whole system, would yet render its enforcement extremely difficult, and wrought with trouble. If, on the contrary, a fixed number of census children is taken as a standard, no district can have an interest in employing more teachers than it unquestionably needs. By such a standard some of the most populous districts undoubtedly suffer a loss of receipts, but not in violation of equity, as was shown above. This loss of receipts falls upon very few districts, and will be hardly felt by them if the State tax is raised to the required rate, in which case the loss will be relative, not actual.

If the rate of the State school tax is raised to twelve cents, enough

funds will accrue to give an apportionment of five dollars per census child. Even with this increased State apportionment, Calaveras, Colusa, El Dorado, Lassen, Mendocino, Mono, Plumas, Shasta, and Sutter Counties, will have a deficiency of county funds with which to complement the State School Fund; for Sutter, this deficiency amounts to four thousand five hundred and fifty-six dollars. This deficiency can only be remedied when the just named counties levy for county school purposes the maximum rate, thirty-five cents, allowed by law. In order to compel Boards of Supervisors to do so, the minimum rate should not be less than sufficient to raise a sum equal to four dollars—instead of three, as at present—for each child in the county between five and fifteen years of age.

I have constructed Table V to exhibit the amounts of county school funds to be apportioned, when a State apportionment of five dollars per census child has been made. The amounts of county school funds for eighteen hundred and seventy-three are retained for calculating the county apportionments. Fifteen has been taken to be the minimum number of census children, and five hundred dollars the minimum amount to be raised for every one hundred census children or fraction thereof. In the second column are given the amounts of State school funds to be apportioned for every one hundred census children or fraction thereof; the third column exhibits the amounts of county school funds to be apportioned in the just mentioned manner; the fourth column exhibits the rate of apportionment in proportion to the number of census children which can be made from a balance remaining in the treasury after the apportionments given in the third column have been made. In the fifth column are given the deficiencies which occur in certain counties.

To illustrate: if a State apportionment of five dollars per census child is made, in Alameda County three hundred and eighty-four dollars per teacher will be apportioned to each district. A county apportionment of one hundred and twenty-six dollars per teacher remains to be given to each district. It was shown above that if the County School Fund is large enough to admit of an apportionment in proportion to the number of census children (which may be called the *pro rata* apportionment) after an apportionment of a definite sum per teacher has been made to each district (which may be called the *absolute* apportionment), the absolute apportionment need not be as large as the difference between five hundred dollars and the State apportionment. In the case of Alameda County, the absolute apportionment may be, and should be less than one hundred and twenty-six dollars. In other words, less than $87 \times 126 =$ \$10,962 must be apportioned absolutely. As the sum to be apportioned absolutely is unknown, let us call it x. Every district will receive, then, $\frac{x}{87}$ dollars for every teacher assigned it. As the County School Fund of eighteen hundred and seventy-three amounted to thirty-seven thousand three hundred and fifty-two dollars, a balance of $37{,}352 - x$ remains to be apportioned *pro rata*. The number of census children being six thousand seven hundred and fifty-one, the rate per census child will be $\frac{37{,}352 - x}{6{,}751}$. Therefore a district having the minimum of census children, fifteen, will receive $\frac{x}{87} + 15\left(\frac{37{,}352 - x}{6{,}751}\right)$, which must amount to

one hundred and twenty-six dollars, the amount to be obtained from the County School Fund. The equation determining the value of x, will stand: $\frac{x}{87}+15(\frac{37{,}352-x}{6{,}751})=126$, from which the value of x is found to be four thousand six hundred and thirty-eight dollars. This is the sum, then, which must be apportioned absolutely in Alameda County. But as on dividing it by eighty-seven, to ascertain the amount per teacher, the quotient is fifty-three and a fraction, the fraction must be reckoned as one, and the absolute apportionment will amount to fifty-four dollars per teacher, and four thousand six hundred and ninety-eight dollars will be the sum to be absolutely apportioned. The *pro rata* apportionment will amount to four dollars and eighty-three cents. A district having fifteen children will thus receive $54+(15\times4.85)=\$126$, which added to the State apportionment, three hundred and eighty-four dollars, will give the district the required five hundred dollars.

As in Table III, so in table V, are found several counties against which is marked "insufficient." This means that the County School Fund of these counties is not large enough to give each district the amount needed to complement the State apportionment. Thus, in El Dorado County, two hundred and forty-four dollars is the amount per teacher of county school money, which should be apportioned to each district. But the County Fund of eighteen hundred and seventy-three is not large enough for this by two thousand seven hundred and ninety-three dollars. By raising the County School Fund to the maximum amount, according to Table IV, every county, except Calaveras, El Dorado, and Shasta, will then have sufficient funds. For Calaveras County the deficiency will be only nominal, some fifty dollars; for El Dorado County it will still be some eighteen hundred dollars; for Shasta County it will be some three hundred dollars.

TABLE V.

COUNTIES.	State apportionments per Teacher	County apportionments per Teacher	Pro rata apportionments of county funds.....	Deficiency of county funds.
Alameda	$384	$54	$4 83	.....
Alpine	141	245	9 08	.....
Amador	288	174	2 57	.....
Butte	246	250	81	.....
Calaveras	270	230	Insufficient.	$42
Colusa	210	290	Insufficient.	1,133
Contra Costa	295	188	1 17	.....
Del Norte	217	242	2 76	.....
El Dorado	256	244	Insufficient.	2,793
Fresno	229	161	7 34	.....
Humboldt	278	214	73	.....
Inyo	210	117	11 53	.....
Kern	279	73	9 87	.....
Klamath	276	117	7 11	.....
Lake	221	156	1 18	.....
Lassen	230	270	Insufficient.	1,043
Los Angeles	356	91	3 58	.....
Marin	251	153	6 40	.....
Mariposa	318	129	3 44	.....
Mendocino	250	250	Insufficient.	1,310
Merced	220	71	13 94	.....
Mono	112	488	Insufficient.	80
Monterey	325	128	3 13	.....
Napa	234	232	2 28	.....
Nevada	329	46	8 38	.....
Placer	230	24	6 60	.....
Plumas	171	329	Insufficient.	644
Sacramento	308	.....	.....	.....
San Bernardino	312	173	1 06	.....
San Diego	261	178	4 08	.....
San Francisco	.....	.....	.....	.....
San Joaquin	307	88	5 81	.....
San Luis Obispo	314	161	1 64	.....
San Mateo	341	62	6 47	.....
Santa Barbara	426	10	4 30	.....
Santa Clara	359	91	4 86	.....
Santa Cruz	326	64	7 36	.....
Shasta	228	272	Insufficient.	691
Sierra	213	258	1 96	.....
Siskiyou	214	109	6 48	.....
Solano	304	23	11 56	.....
Sonoma	270	184	3 10	.....
Stanislaus	225	155	7 99	.....
Sutter	179	321	Insufficient.	4,556
Tehama	255	213	2 16	.....
Trinity	265	159	5 08	.....
Tulare	273	163	4 29	.....
Tuolumne	309	164	1 82	.....
Ventura	312	159	1 97	.....
Yolo	283	160	3 14	.....
Yuba	216	226	3 91	.....

In computing the amounts of absolute apportionments of Table V, fifteen census children have been assumed as the minimum number of children. Heretofore, when school funds have been apportioned in proportion to the number of census children belonging to a district, it

has been well enough to fix no legal minimum. But now, when it is proposed to apportion direct to the districts, irrespective, within certain limits, of their number of census children, the necessity of fixing a minimum becomes apparent.

In the following draft of a new School Revenue Law, fifteen has been considered as the minimum number of census children. It will be hardly just to the true interests of education to lower this minimum. The minimum sum to be raised for county school purposes has been raised from three dollars to four dollars per census child. Practically, this is already done in all but three or four counties; but it may be well to insert it in the law, in order to prevent Boards of Supervisors to lower the rate of tax levied for county school purposes below the rate necessitated by the needs of the schools of the county. The maximum rate of tax to be levied for school purposes has been raised from thirty-five cents to fifty cents on each one hundred dollars of taxable property, in order to meet such cases where, by special law, the rate has already been raised to fifty cents, as, for instance, in Plumas County. The other provisions of the law are above explained in full. The law may be considerably simplified, if, in apportioning to the several districts, no distinction is drawn between State and County School Funds. This has the further advantage of reducing the amount of the absolute apportionments, in Alameda County, for instance, from three hundred and eighty-four dollars State, and fifty-four dollars county, total, four hundred and thirty-eight dollars, to four hundred and twenty-four dollars, State and county combined. Another reason for making the suggested modification, is that instead of providing that only the State School Fund shall be used for no other purpose than the payment of teachers, this provision of the law ought to be enlarged so that *no* School Fund, whether county or State, should be used for any other purpose than the payment of teachers, until at least an eight months school has been maintained in the district.

A revenue law, modified in accordance with what has just been said, supplements the "Draft of a New Revenue Law," herewith presented:

DRAFT OF A NEW REVENUE LAW,

Designed to supply each District with an Eight Months School.

ARTICLE XVIII—SCHOOL REVENUE.

SEC. 1815. An annual *ad valorem* tax of twelve cents on each one hundred dollars value of all taxable property throughout the State, is hereby levied and directed to be collected.

SEC. 1816. Said tax shall be called and known as the State school tax; and the State Board of Equalization shall, annually, at the same time other State taxes are levied, add this to the other taxes provided by law to be levied and collected, and it shall be annually collected at the same time and in the same manner as other State taxes are collected.

SEC. 1817. The County Superintendent in each county must, on or before the first regular meeting of the Board of Supervisors in September in each year, furnish the Board of Supervisors and the Auditor, respectively, an estimate in writing of the minimum amount of County School Funds needed for the ensuing year. This amount he must compute as follows:

1. He must ascertain, in the manner provided for in subdivisions one and two of section eighteen hundred and fifty-nine, the total number of teachers for the county;

2. He must calculate the amount required to be raised at five hundred dollars per teacher; from this amount he must deduct the total amount of State apportionments, less ten per cent, received by the county for the next preceding school year; and the remainder shall be the minimum amount of County School Fund needed for the ensuing year; *pro-*

vided, that if this amount is less than sufficient to raise a sum equal to four dollars for each census child in the county, then the minimum amount shall be such a sum as will be equal to four dollars for each census child in the county.

SEC. 1818. The Board of Supervisors, except of the City and County of San Francisco, of each county, must annually, at the time of levying other county taxes, levy a tax to be known as the county school tax, the maximum rate of which must not exceed fifty cents on each one hundred dollars of taxable property in the county, nor the minimum rate be less than sufficient to raise the minimum amount reported by the County Superintendent in accordance with the provisions of the preceding section. The Supervisors must determine the minimum rate of the county school tax as follows:

1. They must deduct fifteen per cent from the equalized value of the last general assessment roll, and the amount required to be raised, divided by the remainder of the assessment roll, is the rate to be levied; but if any fraction of a cent occur it must be taken as a full cent on each one hundred dollars.

SEC. 1819. If the Supervisors fail to levy the tax as herein provided, then the Auditor must, and add it to the assessment roll.

SEC. 1820. All moneys derived from this tax in each county, must be paid into the treasury thereof to the credit of the School Fund.

ARTICLE XX—APPORTIONMENT OF SCHOOL MONEYS.

SEC. 1858. All State school moneys apportioned by the Superintendent of Public Instruction must be apportioned to the several counties in proportion to the number of census children.

SEC. 1859. The County Superintendent must apportion all State and county school moneys, as follows:

1. He must ascertain the number of teachers each district is entitled to, by calculating one teacher for every one hundred census children, or fraction thereof, as shown by the next preceding school census;

2. He must ascertain the total number of teachers for the county by adding together the number of teachers assigned to the several districts;

3. After deducting ten per cent from the State apportionments, he must divide the remainder by the total number of teachers for the county, and the quotient will be the amount of State School Fund which he must apportion to each district for every teacher assigned it;

4. Deducting the amount of State School Fund apportioned to each district for every teacher assigned it, for the next preceding school year, from five hundred dollars, the remainder shall be the minimum amount of County School Fund which must be apportioned to each district for every teacher assigned it, and the amount thus found multiplied in the total number of teachers for the county, shall be the total minimum amount of County School Fund needed for the county for the ensuing year; *provided*, that if this total minimum amount of County School Fund equals or exceeds the total amount of County School Fund apportioned the next preceding school year, then the minimum amount of County School Fund which must be apportioned to each district for every teacher assigned it must be found by dividing the total amount of County School Fund apportioned the next preceding school year in the total number of teachers for the county, as shown by the next preceding school census; but if the total minimum amount of County School Fund needed for the ensuing year is less than the total amount of County School Fund apportioned the next preceding school year, then the amount of County School Fund to be apportioned to each district for every teacher assigned it, must be found as follows:

(*a.*) Multiply the difference between five hundred dollars and the State apportionment made according to subdivision three of this section, in the number of census children, and multiply the resulting product in the total number of teachers for the county;

(*b.*) Multiply the amount of County School Fund apportioned the next preceding year by fifteen, and the resulting product in the total number of teachers for the county, as shown by the next preceding school census;

(*c.*) Multiply the total number of teachers for the county by fifteen; subtract this product from the total number of census children as shown by the next preceding school census;

(*d.*) Subtract the last product of subdivision (*b*) from the last product of subdivision (*a*); divide the remainder by the remainder of subdivision (*c*); divide the quotient in the total number of teachers for the county, any occurring fraction being taken as one, and the resulting quotient will be the amount in dollars to be apportioned to each district for every teacher assigned it;

5. Any County School Fund remaining on hand after each district has received for every teacher assigned it the amount of County Fund due it according to subdivision four of this section, must be apportioned to the school districts in proportion to the number of census children.

A MODIFICATION OF THE ABOVE DRAFT.

Article XVIII remains the same as given above. Article XX is modified to read as follows:

SEC. 1858. Same as given above.

SEC. 1859. The County Superintendent must apportion all State and county school moneys as follows:

1. He must ascertain the number of teachers each district is entitled to, by calculating one teacher for every one hundred census children or fraction thereof, as shown by the next preceding school census;

2. He must ascertain the total number of teachers for the county by adding together the number of teachers assigned to the several districts;

3. Five hundred dollars shall be the minimum amount to be apportioned to each district for every teacher assigned it, and must be apportioned to each district in the following manner:

(*a.*) He must ascertain the minimum amount of school funds required for the county, by multiplying five hundred dollars in the total number of teachers for the county;

(*b.*) If this minimum amount exceeds or equals the total amount of school funds, both State and county, apportioned the next preceding school year, then the amount to be apportioned to each district for every teacher assigned it, must be found by dividing the amount of school funds apportioned the next preceding school year in the total number of teachers for the county, as shown by the next preceding school census;

(*c.*) If the minimum amount of school funds needed for the county, as ascertained in subdivision (*a*), is less than the total amount of school funds apportioned the next preceding school year, then the amount of county school fund to be apportioned to each district for every teacher assigned it must be found as follows:

(1.) Multiply five hundred dollars in the number of census children, as shown by the next preceding school census, and multiply the resulting product in the total number of teachers for the county;

(2.) Multiply the amount of school funds apportioned the next preceding year by fifteen, and the resulting product in the total number of teachers for the county, as shown by the next preceding school census;

(3.) Multiply the total number of teachers for the county by fifteen; subtract the product from the total number of census children, as shown by the next preceding school census;

(4.) Subtract the last product of subdivision (2) from the last product of subdivision (1); divide the remainder by the remainder of subdivision (3); divide the quotient in the total number of teachers for the county, any occurring fraction being taken as one; and the resulting quotient will be the amount in dollars to be apportioned to each district for every teacher assigned it;

4. Any school fund remaining on hand after each district has received for every teacher assigned it, the amount found due it for every teacher, according to subdivision three of this section, must be apportioned to the several districts in proportion to the number of census children.

THE NEED OF TRAINED TEACHERS.

I shall now consider a question which concerns the practical workings of our public school system. It must be confessed, that strictures and criticisms upon our public schools have become of late so widespread and earnest, that the efficiency of our whole system has been seriously questioned. Not only by its enemies, but by its most steadfast friends. It is, therefore, incumbent upon all true friends of popular education, to calmly search for the evils which exist, to bring them to the light, and to apply the remedies.

The most marked anomaly in our school system is the total absence of any provisions providing that none but trained teachers must be placed in charge of schools. The public school system of every nation, except the American, makes as definite and elaborate provisions for insuring that the work of popular education be placed in none but qualified hands, as it makes minute provisions for the support and government

of the schools. Some nations even go further, and provide that the work of private schools as well, be intrusted only to qualified teachers.

This anomaly, this grave defect in the American system, is almost inexplicable. Coeval with the inception of the system, have thoughtful men drawn attention to this defect. From the dedication of the first American public school, to the last teachers' institute, every prominent educator has uttered his solemn protest against this degradation of the sacred profession of teaching to the level of mere school keeping. In vain has every failure of our public schools been traced to this defect in our system: all the protests, all the warnings, all the failures, have exacted no further recognition from the powers "that be" than that, and mostly very unwillingly, some provisions have been made that those who *may desire it*, can obtain a professional training. It is only recently that facilities are offered to persons desirous of becoming teachers, to prepare themselves for the work by an appropriate course of study, and a practical acquaintance with the labors and duties of the school-room. It is time that every candidate for admission to the profession be *required* to avail himself of these facilities.

"Teaching is an *art* to be learned by apprenticeship, like any other art, and the special training for the business of teaching is as indispensable as for any other pursuit or profession; and the time, it is believed, is not very distant, when intelligent parents would think it no less absurd to place their children in charge of a teacher who had not been trained in the principles and methods of instruction, than to employ a surgeon who has never made himself acquainted with the science of human anatomy." In the language of the gifted Edward Everett: "If the teacher was to fashion your child's personal proportions, or to remodel his features, with what jealousy would you inquire after his qualifications for that task? Is it of less importance how he fashions and moulds the features of the mind? The husbandman can tell us if it is a matter of little or no consequence whether you employ a skillful or unskillful person to raise a crop of corn, the growth of a few months, under a simple process of culture. Every man's reflection and experience will satisfy him that the teacher's duty is important, complicated, and arduous. It is not a mere piece of jobwork to which any one can turn his hand, but a professional calling, which requires knowledge, judgment, and experience."

Dr. Channing, in an address delivered in Boston, on the twenty-eighth of February, eighteen hundred and thirty-seven, states that "the most crying want in this commonwealth is the want of accomplished teachers. We boast of our schools; but our schools do comparatively little, for want of educated instructors. Without good teaching, a school is but a name." Dr. Channing's declaration has been repeated again and again, even *ad nauseam*, but it must be repeated until the people prove no longer blind to their highest, holiest interests, but awaken to the necessity of qualified instructors, of teachers systematically educated for the profession. Then will they demand that we shall have not only "educated shoemakers, and carpenters, and goldsmiths—that is, men brought up to their business"—but also educated schoolmasters. Then, the reign of the school *keeper* will be at an end, and that of the school *teacher* will begin.

"Of the three hundred thousand persons that 'keep school' in our country, not more than one tenth can be regarded as professional teachers; that is, teachers trained to their business and intending to pursue it for a term of years. From the various normal schools alto-

gether, there are graduated annually not more than two thousand, at a liberal estimate; and of these, at least one half drop out of the occupation in five years. Most of our schools *outside* of our large cities, and many of our lower classes *within* our cities, are *kept*, not taught, by unskilled and untrained labor, at the wages of unskilled labor. The pay of these unskilled 'school keepers' is less than that of any artisans or mechanics in any occupation that requires a trained apprenticeship." Of the two thousand three hundred and thirty-six teachers employed in the schools of California, only about two hundred and forty are graduates of normal schools; that is, teachers trained for their work!

No wonder, then, that so many teachers do not *teach*. And the people are made painfully aware of this. They are awakening to the fact that there is an enormous waste of time, of energy, in the school-room; that the results are not commensurate with the labor and the treasure bestowed upon our schools. We pride ourselves, and justly, upon our fine, almost palatial school houses; we point with satisfaction to the millions spent yearly in the cause of popular education. California, with a population of only six hundred thousand, spent last year nearly two and a quarter million dollars for public schools; our school property is valued at over four million dollars. Other States spend as much or more in proportion. And yet, at the recent examination of candidates for cadetship at West Point, forty-nine out of one hundred and thirty-four were rejected, on account of failure to pass the literary examination. The Examining Board, in their report, state that "this result is due not to any undue elevation of the standard of admission, nor to any excessive severity in the examination, but in some cases to the inconsiderateness in making the appointment; in others, to the failure of the appointee to appreciate the honor and duty to which he is called; in a few others, to lack of facilities for preliminary education; *and, most of all, to want of thoroughness in the schools of the country with respect to their primary work. The Academy owes it to itself, and to its influence as a national institution on the whole system of popular education, to render and publish to the world this honest verdict.* If our school boards and superintendents and teachers in the North and in the South, in the East and in the West, will but heed the verdict, and use due diligence to correct this great defect, some abiding good may come from the mortifying experience of this year's examination of candidates for admission to the Academy. *Therefore the Board recommend that all candidates be summoned to the Academy one month before the examination, and that instructors be detailed to instruct them daily in the studies upon which they are to be examined.*"

The italics in the above are mine, and are employed to draw attention to the fact, that the charge thus brought against our primary schools has been repeatedly preferred by almost every high school, academy, college, and university in the country, from East to West, North to South, and every one of them has seen itself compelled to adopt some such remedial measure as advocated by the Examining Board above quoted.

To give the popular strictures and criticisms upon our public schools, I shall quote from the Biennial Report for eighteen hundred and seventy-one and seventy-two, of Hon. Newton Bateman, Superintendent of Public Instruction of Illinois:

It is not to be denied, then, that the confidence of the people in that great American institution, The Public School, is in some danger of being disturbed. A feeling of doubt and uneasiness is abroad, and each year finds a certain undercurrent of questioning unrest enhanced, rather than diminished. It is, for the most part, rather vague and uncentered, as yet, taking on no very definite forms of action or purpose, or even of opinion, but constantly coming to the surface in the daily life and intercourse of the people, and finding expression now and then in the strictures of the press, in unfriendly legislation it may be, in the retrogressive measures of particular school communities, and in various other ways.

This state of things is not peculiar to Illinois, or to any other individual State, nor yet to the West, or any particular group of States or region of country, but is substantially common to all the States and to the whole country. Doubts, questionings, murmurs of discontent, mingled with voices of direct opposition or appeals for reconstruction and improvement, are coming up from every quarter of the Union—from the old States as well as from the new. This statement is not to be understood as affirming or implying that the public opinion of any State having a well established system of common schools has become hostile to such system, as such, or to the policy of free schools supported and controlled by the State. It is believed that no instance of that kind has occurred, or is likely to occur, but, contrariwise, that on the main question the sentiment of the States, and of the nation as the aggregate of States, is as sound and as firm as ever. Indeed, the number of those who are known to be openly dissatisfied with the present order of things in public education, is still quite small, comparatively, while nearly all even of these earnestly disclaim any unfriendliness of motive or of disposition, as respects the fundamental principles involved. They declare, with almost one voice, that what they seek is not the overthrow of common schools, but their improvement and greater efficiency. It is only when these scattered notes of dissent are gathered into one, and considered as a whole, that their volume and import become serious.

It is worth while to examine these objections, honestly and thoroughly. If they, or any of them, are founded in reason and truth, and supported by facts, it is of vast moment that immediate recognition be given them, and that the proper correctives be applied. If there is no substantial ground for the strictures in question—if the public schools are as good and efficient as the best present intelligence and experience can make them—it is of hardly less moment that this fact should also be clearly shown. Complaints and criticisms will not cease; it is not to be expected, hardly to be desired; they are, to a certain extent, healthful tokens of popular interest and watchfulness. Many of these are, indeed, frivolous and puerile, prompted by ignorance, temporary irritation, or local ill will. But such mere captiousness is without significance, and does little harm. Then there are the chronic grumblers and fault-finders, who are never so happy as when they are miserable; who weep and lament on general principles, and who would continue to do so, all the same, were all their objections answered and all their recommendations adopted. There is also a class of theorists and abstractionists who are never worried by facts, or perturbed by concrete difficulties, but persist, with sublime and beautiful tranquility, in forcing all schemes of education into alignment with their ideal standards, regardless of obstacles however stupendous or invincible. These are they who smile in pity at the notion that a system of instruction, which is good anywhere, is not equally good everywhere—that what works well in Prussia and Switzerland, may not be just the thing for the States of North America. What! say they, are principles, and the methods founded thereon, affected by degrees of latitude and longitude?

Another distinct body is to be seen in the ranks of the attacking forces. These are *mounted* men, all of them. The animals which they bestride differ greatly in size, color, equipments, and speed—a very picturesque and motley squadron—but certain striking characteristics betray the common origin of all. They are but different species of the same genus—the genus *Hobby*. The appearance of these mounted cohorts when deployed in line of battle, in front of the serried hosts of the common school army, is striking. Each trooper flies a pennon of different shape and color, and inscribed with a different legend. It is difficult to decipher them, amid the plunging and cavorting of the rampant steeds, goaded by the savage roweling of the impetuous riders. But here and there, as the banners stream out in the upper air and flash in the sunlight, the following slogans, among others, become legible: "Moral suasion only"—"Spare the rod, and spoil the child"—"Object lessons"—"No new-fangled notions"—"Grammar is the principal thing"—"Reading, writing, and arithmetic, the true common school trinity"—"Out with geography, in with history"—"The word method forever"—"The good old ways"—"Pestolozzi is king"—"Teach without text books"—"Oral teaching is a humbug"—"Kindergartens, and then the millennium"—"Music and drawing at all hazards"—"The common English branches are enough"—"Out with the bible; no priestcraft"—"Moral instruction, or abolish the system"—"The practical only"—"Mental discipline"—"No high schools"—"Public high schools, the people's colleges"—"An American education for Americans"—"German and French, by all means"—"The synthetic method"—"The analytic method"—"The inductive method"—"Analysis, synthesis, and induction, now and forever, one and inseparable"—etc., etc.

It will be seen that these assaulting parties are as hostile to each other as to the schools and school systems themselves, the only bond of union consisting in the fact that each trooper levels his lance against some one point of the common school line, while no two of

them agree in assailing precisely the same point. They are all specialists and hobbyists, and hence their strictures are without much force or significance in the estimation of persons of thoughtful and well balanced minds.

The elements of opposition coalesce in divers other forms, under the power of various affinities, motives, and purposes, prominent among which are those of an illiberal, unintelligent, and selfish character. Thus, the hard and miserly join hands to break down a system which extorts taxes from their broad acres and hoarded wealth; the childless unite in objecting to assist in educating the children of others; those who schooled their children under the old regime, would like to know why their present neighbors should not also pay their own tuition bills; those who have grown rich and great without any education to speak of, do not see why their children and their neighbors' children should not be left to do the same; some are not able to reconcile the doctrine of free schools by State law, with their notions of personal liberty, free government, and the declaration of independence; others, of aristocratic pretensions, affect to question the wisdom and to deny the obligation of educating the masses, alleging that even if labor and learning are not incompatible, ignorance is at least the normal and happier condition of the laboring classes; nor are there wanting those who flatly deny that intelligence promotes virtue and thrift, and lessens profligacy and crime, and who therefore denounce public schools in the name of religion and political economy. These, and many other classes and affiliations of persons, added to a species of moral wasps to be found in the social atmosphere of nearly every community, whose nature it seems to be to buzz and sting, keep up a very lively skirmishing along the outposts of the common school army, never permitting the sentinels to sleep at their posts. And it is well.

But the public schools are arraigned by men who belong to none of these classes of theorists, abstractionists, misers, aristocrats, and chronic fault-finders; by men who are actuated by none but the worthiest motives, and who have no personal or selfish ends to subserve. There are allegations of inefficiency and failure which, if true, affect not merely the form but the substance of the school system. An army may be indifferent to the driving in of its distant outposts, but an assault in force upon its intrenched camp is another matter. A tree may be marred by too free or careless a lopping off of its outer branches, but when the axe is laid at the root, its life is imperiled. I have been at considerable pains to gather up what is alleged about the schools, and the result has suggested the foregoing illustrations—they are not inappropriate. The public schools do stand arraigned at the bar of public opinion, upon charges of a very serious nature, preferred by persons whose opinions and statements are entitled to thoughtful consideration. It is therefore proposed, in the interest of free schools, upon whose character so much depends, and in the spirit of candor and truth, to examine some of these witnesses, to note the nature and essence of their testimony, and consider the indictment founded thereon. I give the substance, not always the language, of the numerous communications received. Even where the language is recast, the exact meaning of the writers is carefully preserved.

From a Farmer.—"I am a farmer. My son is now eighteen years of age. He began to attend the district school at the age of six, and has attended two terms, or six months, in each year, from that time until now. He is a boy of good health, and of at least average mental abilities, and has never been considered less studious than his school fellows and classmates. His teachers have been as competent as the average of those employed in country districts. His time in school has been spent, exclusively, upon the seven rudimentary branches taught in the common district schools, spelling, reading, writing, arithmetic, geography, grammar, and the history of the United States. He is, nevertheless, a poor speller, reader, and writer; knows little of arithmetic or grammar, except the rules, and has only a smattering of geography and history. I found out these things by asking him questions, and setting him to do things for me. I take an agricultural paper, and one evening I asked John (my son's name) to take pen and paper and write for me a short article for the newspaper, on the *Culture of Corn*, about which I thought I had some ideas worth communicating. I sat in my easy chair and dictated what I had to say and John wrote it down. When the article was finished, I told John to put my initials to it and send it to the office of the paper. Two weeks afterward, when the paper came, I looked for my article, but found, instead, the following editorial note:

"'If our correspondent, 'B. J. T.,' knew one tenth part as much about *orthography*, *punctuation*, *paragraphing*, and the use of *capital letters*, as he does about '*corn culture*,' his article would have been gladly inserted. His ignorance of those matters, so important to editors and printers, seems as remarkable as his knowledge of the subject treated of. We advise him to write again, and get some intelligent schoolboy to copy his article for him, before sending it to us!'

"My reflections on reading this gentle hint must be left to the imagination. Was not my John an 'intelligent schoolboy?' I would look further into the matter. I asked him to point out Salt Lake City on the map. He did so. By what name are the inhabitants of that city known? He could not tell. Is there anything peculiar in their religious notions and social customs? Not that he knew of. How much sooner does the sun rise in Boston than in San Francisco? He did not know. Why should it rise *any* sooner? He could not say. Though only a farmer, I am fond of Shakspeare, and asked John to read me a scene from King Lear. It could not be called reading, and, in much pain, I soon

desired him to stop. How many different sounds are there in the word *eight*? *Five*, of *course*. Did the colonies, prior to the Revolution, all have the same form of government? Yes. What was it called? Colonial government. How many different kinds of national government have we had since the Revolution? Two, democratic and republican. John, said I, to-day I sold a load of hay, weighing one thousand seven hundred and fifty pounds, and received pay for it at the rate of sixteen dollars and fifty cents per ton; how much money did I get? He took his slate and went to work, while I read a fresh copy of the *Times*. In an hour I had finished the paper, but John had not finished his sum. He said there were so many fractions in it, and he couldn't find a rule that would fit exactly. The next evening I told John that I had a little sum in practical farming for him to do: I rented forty acres of land to Mr. Jones, he to put it in corn and allow me one third of the crop for the use of the land. Jones raised two thousand four hundred bushels, the total cost of which, when cribbed, was three hundred and fifty-five dollars. What did Jones' corn cost him per bushel in the crib; what was the cost of the whole crop per acre, and per bushel, and if I sell my share at fifty cents per bushel how much shall I get per acre as rent? John labored on it most of the evening, but did not get correct answers to all of the questions. I then gave him all of the items of cost and profit, and desired him to open an account with that forty-acre lot, in due form, and prepare a correct balance-sheet of the same. He did not know what I meant.

Finding that my poor boy had very little to show for his twelve years of delving in the seven elementary common school branches; that he was a poor reader and a worse writer and speller; that he knew nothing of punctuation, and could not with the matter furnished him, prepare a few pages of manuscript well enough to save them from the editorial waste-basket; that his stock of history and geography was meagre in the extreme, while his knowledge of arithmetic, beyond the verbiage of the text-book, was unequal to simple ordinary business transactions connected with his father's farm—I thought that perhaps he had made up in general knowledge what he lacked in these respects, and continued my inquiries accordingly.

"His reading books contained pieces from eminent orators, statesmen, and patriots; had his teachers told him anything of their biography, characters, and services—of the occasions and circumstances under which their speeches and addresses were delivered? He said they had not. He had read descriptions of many lands and scenes, curious stories of beasts and birds, of insects and fishes; every day, all these years, he had walked over the earth with its many kinds and qualities of soils, its wintry wonders of frost and ice, its vernal freshness and beauty, the Summer splendors of its trees and flowers, and the autumnal glories of its pictured woods and ripened fruits; he had heard the wild scream of the tempest, the Æolian murmurs of the zephyr, the deep bass of the thunder—had watched the sheen and sparkle of the stars of night, the brightening flash of coming day, and the gorgeous skies of sunset—he had lived and moved, and had his being amid these omnipresent wonders of the material world; had his teachers sought to interpret them to him, to awaken his interest in them and to bring him into loving relations with nature, with the objective, the visible, and tangible; had they in any way sought to redeem the dryness and littleness of words and books by showing their relations to the freshness and greatness of ideas and things—had they bidden him watch the curious growths and processes going on about him all the time, the perpetual marvels of plant-life and animated beings, and to move about with every sense awake and alert, eager to note the lessons and revelations coming up from every creature and thing that God has made? 'Why, no,' said he; 'they heard me recite what was in the books.' Of course, I pursued, but did they not do more than that; did they not supplement, and enrich the daily lessons of the books by information, facts, and illustrations drawn from their own reading, observation, and experience, so as to whet your appetite for general knowledge; did they not tell you again and again that the few studies of the district school were chiefly valuable as necessary instruments for future acquisitions, that you might through them become intelligent, well informed, useful, and happy? They had not done any of these things, John said.

"A day or two after this conversation, I took a walk with my son through the gardens, stock yards, fields, and woods, resolved to bring this painful inquiry to a conclusion, and bitterly reproaching myself for having so long taken it for granted that all was well. Of the ground beneath our feet, he only knew that it was a portion of the earth's surface; of the gardens, he knew that vegetables grew in one, and flowers in the other; he knew the names of the various domestic animals, but he did not know which of a cow's jaws was destitute of front teeth, nor, when she rose from the ground, which end of her got up first; the grain in two adjoining fields was six inches high, one wheat, the other oats—he could not distinguish them; all he could say of the meadows, was, that they contained grass; of forest trees, he could tell the names of but few, while of their respective characteristics and values, for fuel, lumber, etc., he was ignorant. But the worst of it all was that the boy's senses seemed inactive, his perceptions blunted, and his mind stupified, by the habit, all these years, of studying mere words instead of things also, and of regarding school work as something separate and apart from the out-door world, having but a vague and unimportant relation to everyday life. Thenceforward I tried to arouse the child's dormant senses and faculties, and to show him what great things God had done for his education; to give him a fresh baptism into the spirit of Nature and the world of realities, from which, alas! his schooling had seemed to separate him."

From a Laborer.—"I am a laborer. My daughter is fifteen years of age. She has attended the district school since her sixth year. I have waited for the time when she could read the paper to me when I returned home from my labor in the evening, and when she could keep my little accounts, and write an occasional letter, and assist her mother in the care and instruction of the younger children, and contribute generally to the attractiveness and decorum of my humble home. In this hope, we have contrived to get along without her services in the household, for more than half the time for nine years. But the close of each successive school year has found her about where she was at its commencement—no perceptible advance, no marked improvement in spelling, reading, or writing. She has gone over the same ground so often that she now seems to put forth no mental effort at all, her mind seems to be losing all grasp and power, and she moves along in a listless mechanical way, in the same old ruts, with no seeming power or even inclination to get out of them. Her school books lost all their freshness and interest years ago, since which time she has really made no progress in learning that I can see; we cannot see that she knows more than she did three or four years ago. Her teachers seem to have no power to reawaken her interest in her old books, or to devise any new methods of enlisting her attention.

"Before she started to school, she was a bright, eager child, watching and questioning me about many things, while at my work; full of wonderment and intelligent curiosity to learn the names and uses of what she saw, and adding daily to her little stores of knowledge. In this respect she does not seem like the same child now. Her eagerness to learn about flowers and plants, about trees and animals, and the many other things of out-door life which once had such a charm for her, is gone. She seems to think that there is no teacher but the schoolmaster, no place to study in but the school house, and nothing to be learned but what is in books. Even of her text books, she knows little save their words; it is surprising what few *ideas* she gains from them. She seems scarcely to apprehend the use of words, regarding them as of use in themselves, rather than as the means of thought and knowledge.

"Thus, she gave correctly the book definitions of latitude and longitude, but had no proper notion of the things defined; she had at her tongue's end the elementary rules of syntax, but habitually violated them in conversation, saying, 'my hands is cold,' 'her and me are going,' etc., in the next breath after faultlessly repeating the violated rules; she could recite, verbatim, all the rules for calculating interest, and had performed, she said, all the examples in the book, but returned to me, unsolved, a little six per cent note that I held against a neighbor, being unable to find the true amount due thereon; her reading is monotonous and mechanical, without spirit or expression, even in her school readers, while newspapers and magazines are almost an unknown language to her—she really can't *read* them at all.

"Nor is this all. She has not improved in morals, and has actually deteriorated in manners. She is less concientious and truthful than she used to be, has not so nice a sense of right and wrong, and is less shocked by acts and words of deception and prevarication. Her ideas of reverence and obedience have not been strengthened at school, but contrawise. I cannot learn that her teachers are accustomed to inculcate the moral virtues, or to hold up the divine law as the ground of moral obligation and the criterion of right and wrong in human conduct. Hence, the fear of detection and exposure, or some other equally inferior motive, seems to have more weight in deterring her from wrongdoing, than any well-defined principle of right. She does not seem to have ever learned from her teachers that all absolutely good conduct consists in doing right because it is right, for right's sake. She has always been so taught at home, and it is a grief to us to think that the same principles of truth and right are not set forth and confirmed at school.

"If the school has contributed little to the growth and development of right moral principles in our little girl; to the formation of a concientious and lovely character; it has done still less toward the improvement of her manners. The latter is, indeed, a necessary sequence of the former, and nothing else was to be expected; because gentle manners come of a gentle spirit, and refinement in outward acts is but the manifestation of inward refinement and purity. It seems to me, that no one who is ignorant of this, and who does not illustrate its truth in his own daily life, ought to be a teacher. But it is quite certain that our Mary receives no help from her teachers in this direction. On the contrary, greater efforts are constantly needed at home to keep her from lapsing more and more into rude, uncouth and unamiable ways. Carelessness of speech and of apparel; vulgar loudness of tone in conversation, with offensive flippancy of air and bearing in the presence of older people; the use of slang phrases, supposed to be piquant and smart, with other indecorums of language; slouchiness in walking and sitting, and a general tendency to uncouthness of deportment; neglect of nails, hair, and hands; soiling, disfigurement, and mutilation of books; a noisy and piggish way of eating and drinking, and other offenses against the proprieties of the table; lack of delicacy and refinement, and of thoughtful courtesy to others—these are some of the violations of decorum and good breeding which seem to receive no check, or even notice, at school, and against which there is a steadily increasing need of admonition and restraint at home. It may be that we are particularly unfortunate in our schools and teachers, but they seem to be about as good as those of the neighboring districts. We have always paid our teacher from twenty-five to thirty dollars a month, which

I think ought to secure us the services of a pretty good teacher. We have concluded not to send Mary to the public school any more, and unless we can have a better school, we don't know what to do about the education of the younger children."

From an Editor.—"I am an editor. The handling and inspection of manuscripts is a part of my daily business. The cardinal virtues to be observed in writing for the press are legibility, correct orthography, careful and proper punctuation, right use of capital letters, suitable division into paragraphs, and the use of one side only of the paper. A disregard or violation of these rules, is considered as a deadly sin by all editors and compositors, and consigns to the waste basket and to oblivion, reams and bushels of manuscripts every year. They may possess other merits in high degree, but, if lacking in these essentials, overboard they must go. Editors and compositors have no time to eliminate the grain from the chaff; the grist must come to the mill all ready for the hopper, or it cannot be ground, or, if taken just as it comes, the result would often be a sad compound of flour and bran. It is an impertinence for writers to send their productions to publishers in a crude, half-finished state, misspelt, scrawled and jumbled, and expect the printers to waste their time in doing what it is not their business to do. As well might farmers take their wheat to market, in the ear; their corn in the husk, or their wool on the sheep's backs, expecting the purchasers to shear the sheep, thresh the wheat, and husk the corn, with no reduction of price. Not ten per cent of the manuscripts sent to editors are worth printing any way, but even those containing thoughts of fine gold are justly discarded if the glittering ore is half concealed in the dirt of an execrable chirography, or imbedded in the hard quartz of false syntax and heathenish orthography. In the miner's rough phrase, 'such diggings don't pan out worth a cent.'

"As an editor of a village paper, I have had ample opportunity to note what the public schools are doing in behalf of these few and simple, but very important elements of a good English education—penmanship, orthography, punctuation, and the minor niceties and proprieties involved in letter-writing, and in preparing communications for the press. Beginning with my own three children, aged respectively twelve, fifteen, and seventeen years, not one of them has accuired in school a competent knowledge of these things. I repeatedly inspected their 'compositions,' and always found them grossly defective in these particulars. They seem to have no idea at all of breaks and paragraphs, according to the sense, but, after finishing what they have to say on one point or topic, they are almost sure to begin another topic on the same line, and sometimes with a small letter.

"The fact is my children have received no instruction in these matters, for the very good reason that their present teacher (and probably those before him) is himself ignorant of the rules of punctuation, composition, and kindred branches of a good English education. This I found out by receiving from him, not long ago, for publication in my paper, a communication of seven foolscap pages in length, which was not only written on both sides of the paper, in a cramped school-boy hand, and with numerous errors in orthography and the use of capitals, but there was not a break or paragraph, nor a punctuation mark, from beginning to end. The object of the communication was to show the advantages, to the rising generation, of common schools in general, and of his school in particular! which was decidedly 'good,' under the circumstances.

"Shortly after this discovery as to the literary and scriptory qualifications of our teacher, I visited his school, and remained long enough to note his method of conducting recitations. He first called a class in history. The text book had questions at the bottom of each page. From these questions the teacher did not deviate in the least particular, nor did he ask any that were not in the printed list. Sitting by his side, I noticed that he had placed pencil marks around so much of the text as contained the answers to the successive questions, and that his eyes kept glancing from the respective questions to the marked answers thereto. Answers given in the very words of the author were accepted as satisfactory, while all others were carefully amended by the teacher, in accordance with the bracketed passages of the text. Thus: 'When was gold discovered in California, and what followed?' The pupil to whom this question was addressed, answered briskly as follows: 'Gold was discovered in California soon after the close of the Mexican war, and caused a great rush to the gold mines from every part of the world.' 'Next,' said the teacher, with his eye on the text. 'Some persons accidently found gold in California, while they were making a treaty of peace with Mexico, and people immediately began to flock to the land of gold from all parts of the world,' was the animated reply. 'Next,' said the teacher, with some impatience, not removing his eye from the marked passage. 'They found gold in California after the Mexican war was over, and before the treaty was made, and people began to emigrate there, from nearly everywhere, to get the gold,' was the spirited answer. 'Any one in the class who can answer the question may raise his hand,' said the teacher of history, growing a little red in the face, and placing his finger on the paragraph so as not to lose the place while he looked at the class for the coveted signal. Three hands were raised. 'John may answer,' said the principal of our village school, quickly fixing his eye again upon the sentences marked in pencil. And now came the hoped-for answer, *verbatim et literatim*, repeated in a slow, precise, mechanical tone: 'Just before the conclusion of the treaty with Mexico, gold was discovered in California; news of this discovery caused a wonderful tide of emigration from all parts of the civilized world to set towards the land of gold.' 'Right,' said the principal of our public school,

with an air of relief, his face brightening up, as he turned upon me a satisfied look. The whole thing was a matter of sheer memory; not one scintilla of animation, nor one discursive, illustrative, or explanatory remark on the part of the teacher. The subsequent recitations, in grammar and arithmetic, were conducted in substantially the same dull, spiritless *verbatim* manner—the words of the book being the alpha and omega in all of them.

"My oldest boy had completed the course in higher arithmetic, including the buying and selling of exchange and stocks, business forms of all kinds, and the nomenclature of financial operations, and of trade and commerce generally. Knowing this, I handed him the following slips cut from one of my commercial exchanges, and desired him to read and explain them:

"'New York exchange was higher to-day, in consequence of the heavy demand to meet maturing liabilities to Eastern creditors. Sales were made, betweeen banks, from par to fifty cents per one thousand dollars premium. In the open market, good commercial paper, with two names, sells at one and a half per cent per month, and the money is not to be had, outside of banks, for less.

"'Messrs. Lunt, Preston, and Kean quote as follows, this afternoon:

	Buying.	Selling.
U. S. 6's of '81	116	116¼
5-20's of '62	111¾	112
5-20's of '64	111¾	112
5-20's of '65	112	112⅛
5-20's of '65, January and July	114	114¼
5-20's of '67, January and July	114¼	114⅛
5-20's of '68, January and July	114	114¼
10-40's	108	108¼
U. S. 5's (new issue)	110⅞	111⅛
U. S. currency 6's	113¾	113⅝
Northern Pacific Gold 7-30's	.....	100 and int.
Chicago City 7's	.....	99 and int.
Cook County 7's	.....	99 and int.
Illinois County and Township 10's	95@95	.....
Sterling Exchange (large drafts)	.....	108¾@110¼

"He could not do either the one or the other. The very language seemed almost as unintelligible to him as if it were written in an unknown tongue, and he stumbled through it in a halting, mechanical way, showing that his understanding had no part whatever in the performance. He could not tell me the meaning of 'New York exchange,' 'sales between banks,' 'open market,' 'good commercial paper with two names,' 'U. S. 6's of '81,' '5-20's of '62,' 'Chicago City 7's,' nor any of the other terms in the list—it was all unintelligible and meaningless to him. It is not at all to be wondered at that a boy of seventeen should not be familiar with commercial technology, unless specially instructed therein. But my boy had been studying arithmetic for seven years, and had been through a treatise on that science which professed to contain, and which did contain, a clear statement of all the principles necessary to a full understanding of everything in those printed slips. The teacher had never applied these definitions and principles to the current and living language and facts of commerce and finance, as displayed daily in the newspapers, but had stuck to his text book as though they had no perceivable connection with the actual business and trade of the world. That is why my boy, after spending nine years in the public schools, could not even read intelligently a money article in one of the daily papers. A small fraction of the time spent by the teacher in bothering his pupils over a mass of worthless details in grammar, geography, and history, would have more than sufficed to render them familiar with all the business terms and financial phrases constantly employed by the commercial press, and by writers on fiscal affairs, and that without the loss of anything worth knowing or remembering in the branches mentioned. These are the facts with regard to my own children, and my opinions based thereon."

*

We have now examined three witnesses, and heard what they have to say. Care has been taken to collect facts, views, and opinions from the representatives of many other classes and departments of labor and industry; from those who earn their bread by daily manual toil, to the so-called learned and professional classes; and if there were space to record their statements, or if further testimony were necessary to the purpose in hand, many others stand ready to be heard. Of course there is the greatest variety of opinions, criticisms, and suggestions; but, while emphasizing those phases of the subject which their

own particular occupations or predilections would naturally bring most prominently to view, there is, nevertheless, a substantial and surprising agreement in a few important particulars. Among the points which a comparison of the statements at hand shows to be held in common, are the following: (1.) That the course of study in the common, ungraded schools of the country needs revision, both as to the branches of study embraced therein, and as to the relative amount of time devoted to each one thereof. (2.) That many of these schools are not doing their elementary work well; that the pupils rarely become good and sure spellers, or easy and fluent readers, and are deficient in penmanship, and especially in a knowledge of the primary rules pertaining to punctuation, the use of capitals, and the common proprieties of letter-writing and English composition. (3.) That the teaching is too bookish, narrow, and technical, being largely defective in method, dull in manner, and therefore devoid of attractiveness, inspiration, and zest. (4.) That there is too much isolation in schools and school work—too little recognition and intelligent sympathy between the little world, little lessons, and little books within the school house, and the great world, great lessons, and wonderful books outside of the school house; too little apprehension and realization of the fact that schools and school days are but places and days of apprenticeship, wherein to learn the use of a few necessary tools and implements, wherewith the better to fight the long, hard battles of life and duty in the world and out of doors; and, hence, the closer the connection that is kept up between those tools and implements and the scenes wherein, and the materials whereon, they are to be wielded, the better. (5.) And, finally, that the attention paid to the morals and manners of the pupils—to those many little matters of deportment and speech which contribute so much to the comfort and charm of home and of society—is unsatisfactory. Such are the witnesses and their testimony, and it must be conceded that if they do not make out a case against the schools, they afford much matter for reflection.

It will be understood, of course, that these facts and strictures were brought out, mainly, in response to invitations to that effect—they exhibit one side only of the question, and are here recorded as such, and for that purpose. It would not be difficult to obtain counter statements to an almost unlimited extent, but the other side has so often been heard, and the tendency to laud the schools without due discrimination, in educational reports and elsewhere, is so strong, that it has seemed of use to allow full weight at this time to what may be advanced by way of criticism. That which is good, or that which is good in the main, as our public schools most certainly are, has much to gain and nothing to lose from honest investigation, and searching inquiry.

And yet how can we expect any thing else than the above testimony? How can we expect that the schools rise higher than the system? If there were not radical defects in the system, there would be no wide-spread failures of the schools. If the scholars, after leaving school, are not well grounded in the "seven common school branches," how can our teachers be, when they are directly drawn from these very scholars, and pass from the pupil's bench, without any professional preparation, to the teacher's desk? Girls, in doffing their short clothes, frequently don the teacher's cloak. This happened so frequently in cities, that Boards of Education saw themselves compelled to adopt a rule that no teacher less than *sixteen* years of age could be appointed to a position. Still the girls, who had presumably a good knowledge of the text books they had just thumbed, and being able thus to pass a very creditable examination on them, were pushed and forced into the primary schools, until in sheer self-defense, and to insure at least some stability of character, some recognition of the difficulties of the work, and of the qualifications requisite for its performance, some Boards of Education passed a rule that no teacher less than *eighteen* years of age could aspire to a situation.

Country schools have not fared much better. At some county examinations, troops of girls, ranging from fourteen to sixteen years of age, passed their examination, frequently under the personal supervision of their teachers, as members of the Board of Examination, and then they were full-fledged teachers. The evil became so crying, that at its last meeting the State Board of Education saw itself compelled to pass a rule that no candidate for teacher's certificate must be less than eighteen years of age. What intensifies the evil is that these young girls thus prematurely crowding—yes, actually crowding into the profession, and

generally at the expense of experienced teachers—have no higher conception of the profession than that it presents a genteel method of raising a little pin-money, or of agreeably passing the time till "he" withdraws them from the school. Far be it from me to overlook for a moment those noble and devoted women who have spent "their very life-blood of body and mind" in the profession. We cannot enough honor them, and it would be sacrilege to name them in one breath with the others just described. And keenly these real teachers feel the degradation of being put on a level with those butterflies who are, for the nonce, dubbed "teachers." Many an excellent teacher has been lost to the profession because he or she found that all the efforts to realize the highest ideal of a *teacher* would count for no more, in the judgment of the crowd, than the crudest efforts of the most mechanical school *keeper*.

California is not alone suffering from young and inexperienced teachers. In Pennsylvania a writer places the average age of teachers in the State at about twenty-three. Of course many, very many, teachers must be much younger than this, for there are many aged and middle-aged teachers who are constantly employed in the schools. "Visiting a school recently," says the writer, who signs himself "A Teacher," "that was presided over by a mere boy, I observed the following motto, among others, hanging on the walls of the school-room: 'The Common Schools—our Country's Hope.' I could not help reflecting on the import of the motto and the young teacher's mission to propitiate its realization. If it is true that the common school system is the strong pillar of our State, it cannot be denied that her destiny lies, to a great extent, in the hands of inexperienced, fickle-minded boys and girls, for by them the majority of our schools are taught. The average age of the teachers of our State [Pennsylvania] is twenty-three years. Now, since the teacher's position is such a responsible one, the majority of persons at this age have not that experience and stability of character necessary to enter upon its duties. If there is any profession demanding experience, force of character, and maturity of mind, it is the teacher's, and these qualities are seldom found associated with the age of twenty-three years. The Constitution of the United States recognizes this fact in providing that no person shall be a representative who shall not have attained the age of twenty-five years, and a Senator under thirty years, and none President under thirty-five years. When the average age of our teachers is twenty-three years, there must, of course, be many who are older and experienced, but the services of these, however important, do not compensate for the inefficiency or positive evil resulting from the employment of so large a proportion of boys and girls. The best instructor is none too good for his position, and has nothing to spare. The best engineer cannot run more than his own train. Intellectually, some of these young teachers are qualified well enough, but this sort of qualification is not all that is needed. The formation of character is one, and perhaps the principal object of our schools, and how much can mere boys and girls accomplish in this respect, who are themselves fickle-minded, and lack moral force? It is an illustration of the blind leading the blind."

The second evil under which our schools are suffering is that in the eyes of many, almost all, teaching is looked upon as a stepping-stone to something higher. Many students of law, medicine, or theology, find the common school a convenient place to replenish their purses. How

can such teachers be successful if their aim is success, not in teaching, but in the contemplated profession? Then, again, the common school is a convenient refuge for stranded ministers, lawyers, doctors, in fact, for any one with a common school education who has failed in every other direction, and now "quietly sits down in the teacher's chair and complacently says: 'At last I have found a place of rest.'"

It is absurd to expect anything else. For the text book is the real teacher in our schools. The text book is the substitute we have put in the place of the trained teacher. The text book not only presents the quantity and quality of the material to be learned by the children; it also defines, if not prescribes, the method according to which the children are to learn. The text book is more considerate yet: By means of printed questions, it relieves the teacher of even the little labor which otherwise might be required of him in framing the questions necessary to gauge the scholar's knowledge of the text. Examine any new text book; its claim to preference over its predecessors rests invariably upon two points: first, the quality and quantity of the matter it presents is better suited to the mental capacity of the minds for whom the book is written; secondly, the plan of presenting this material is, in some points at least, far superior to any previous plan; and a third point generally is, that the questions appended will thoroughly test the scholar's knowledge of the text.

But the text book goes yet further; it determines, on the one hand, the qualifications of the teacher, and on the other hand, his efficiency as a teacher, and the natural result must be that the teacher considers himself merely as the exponent of the text book, and as such he prepares himself for his work, and as such he labors. And if not a necessary result, yet a far too frequent result of the text book system is "the dull, hard pedant, who insists on the pupil's committing to memory and reciting the mere words of the text book, without examination into their sense or meaning." "Text-book-crammed pupils, leaving school with disgust for books," are too numerous to leave us in doubt of this.

The text book system is directly responsible for the overwhelming number of unqualified teachers in our schools. In popular estimation, a teacher need possess but little knowledge beyond the text books from which he has to hear recitations. As long as a certain modicum of text book knowledge is all that is required to pave an entrance into the profession we shall see boys and girls crowding that profession; we shall see temporary teachers filling the places of those who alone, through broad culture and thorough preparation, are entitled to the teacher's desk. It is absurd to expect that we can "allow time in the school-room for the teacher to learn the technique of his profession. He must have mastered that, in theory at least, before he enters upon the actual work. Now, one of the chief tasks of Normal Schools is to teach this technique. The graduates of Normal Schools go to work at the start 'as if they knew what they were about.' They waste no time in learning the little things upon the practice of which depends so much economy of time in the school-room, and hence the success of the teacher. Their scholars go directly to work, and are kept at work. They know what other communities are doing in other schools, and they spare no effort to keep their own up to that standard. They have been taught how different theories of education have worked in the past, and they do not, therefore, waste time in trying plans which were long ago proved to be of no value." We shut blindly our eyes to the signs of the times if we refuse to stop short of providing for our common schools

trained teachers—not trained through repeated and serious failures in the school-room, but trained in a two or three years' course in a Normal School, in a seminary of training. In every country in Europe, in the Canadas, this is required. Says a lady teacher: "Recently, when attending an institute in the eastern part of Maine, I learned, with great satisfaction, that just over the border, in New Brunswick, none but trained teachers are employed. We ought to cover our faces with shame that it is not so here."

In some States there still prevails the good old system of Committeemen, or Trustees, determining the qualifications of any one offering himself as a candidate for "keeping the district school." What a farce! And not much better is the system prevailing in other States—perhaps now in most—of placing the examination of teachers throughout the State exclusively in the hands of experienced teachers. Certainly, on first view, a system far in advance of the former. California is justly held up as a bright example in first inaugurating this system. But, because tried here the longest, its utter inadequacies are most glaringly exhibited in this State. And yet, at a meeting of the National Educational Association, held in Boston in eighteen hundred and seventy-two, when the question of how to insure to the schools only qualified teachers received even greater prominence than is usual at such meetings, the following propositions were presented as providing a panacea for protecting the schools against "charlatans, ignoramuses, and humbugs generally:"

First—A comprehensive system of State, city, county, and town Boards of Examination. Second—Boards of Examination to be made up of State, city, county, or town Superintendents, together with a limited number of professional teachers, appointed in the manner best suited to the school systems of the different States. Third—A graded series of teachers' certificates, from life diplomas down to temporary certificates valid for one year, granted on actual examination only. Fourth—Examinations to be conducted in writing, and the percentages allowed in each study to be indorsed on the certificate.

A teacher's certificate, granted upon the above plan—as almost all certificates are granted in California—simply testifies that its possessor has a definite knowledge of certain subjects. Now, a candidate may appear so well in arithmetic, grammar, and some other studies, as to overcome a complete failure in theory and practice, or methods of teaching, and yet a satisfactory examination in the latter ought to be the first consideration. A superior education does not make a professional teacher; it is one of the requisites, certainly, but by no means the sole, or even chief requisite. A young man graduating at the head of his class may be totally unfit to teach a district school; a man or woman must learn by actual practice in the school-room, or, rather, training-room—as connected with every well organized Normal School—the art of imparting knowledge and of governing. There may and are born teachers, but the number is very small, and would not supply the schools of a single county. It would be the height of folly to expect that a medical student, after studying and mastering no matter how many text books, is sufficiently qualified to begin to practice, and that any lack of professional skill will be easily acquired in experimenting upon the health, limbs, and lives of his trusting patients; it is as egregious a folly to expect that a certain amount—no matter how great an amount—of knowledge entitles any one to supply a want of skill in teaching, by experimenting upon the health and life of the souls and

minds of the children committed to his care. Nay, the latter is the greater folly of the two: for here we are trifling with the immortal part of man. The inexperience and stupidity of the physician are sorely felt at the time; but the ignorance and inexperience of the teacher may continue undetected for years, and there is no reparation of the incalculable injury done to the mind when most plastic.

But it is not possible even of insuring a modicum of literary culture by the present system of examining teachers. Examinations are frequently dishonest. Not only the candidate resorts to dishonest means; County Superintendents have been known to give candidates a few days preliminary examining of the questions upon which they are required to pass. This evil became so notorious, so crying, that the State Board of Examination saw itself compelled to send the examination questions securely sealed, and to insist that County Superintendents do not open them until the regular meeting of the County Board of Examination, and then in presence of at least one member of the Board, other than the County Superintendent. Within the last year one County Superintendent refused to appoint a regular Board of Examination, but conducted the first examination himself, had his wife as an applicant, granted her a certificate, and then, for the next examination, appointed a regular Board. Another County Superintendent never appointed a Board, examined himself, granted himself a certificate, and then had the effrontery to ask for a State certificate upon such a county certificate. A third County Superintendent, after the close of an examination, took the questions home, answered them at his leisure, and found his Board pliable enough to grant him a certificate upon such an examination. Other examples might be multiplied *ad nauseam*, but the above are more than sufficient.

But even granting the possibility of insuring an impartial and rigid examination of the candidates, how are the examiners qualified for their work? In many cases they are not even on a level with the examinee. After every quarterly examination, thirty sets of examination papers are forwarded, on an average, to the State Board, for examination; and a pedagogical almanac, outrivaling "Josh Billings' Allminax," could be compiled from the absurd answers which the County Boards have gravely indorsed as correct.

To show the material which comes before the County Boards of Examination, and of which, to a great extent, the Boards themselves are composed, I present the following sketch from a Pennsylvania School Director. Twenty-five years' active labor in the profession, and what opportunities I have had of examining our country schools and listening to the proceedings of Teachers' Institutes, lead me to fully indorse as correct the statements set forth by said Director:

"It is a painful experience," says Mr. Geo. H. Richard, in the *Pennsylvania School Journal* for October, eighteen hundred and seventy-three, "to listen all day to many of the examinations made by County Superintendents, of those who are applicants for the position of teachers in our common schools. We expect at least that those applicants will be more than ordinarily familiar with the first principles and facts of the subjects in which they propose to give instruction. More than this, we look for evidences of some just conception of the general nature of the teacher's profession, its true spirit, its just demands. Yet, throughout our State within the past few weeks have been, and during the next few weeks will be examined scores of teachers who will fail to answer such expectations in any but the most ordinary degree. Did only new aspi-

rants for the teacher's honorable and responsible position make this failure, we might regard it with more of hope than anxiety. But when very, *very* many of those who have been teaching for several years, give no evidences of improved scholarship, and they are constrained to confess that they have no clear ideas of the nature of the mind they presume to train, and but the faintest, if any, ideas of either the general or special phases of the educational thought of the times, deep anxiety must prevail in the minds and hearts of the true friends of our common schools. Notwithstanding our Normal Schools, our County and District Institutes, and the other influences set to work to energize the teachers and stimulate them to the acquirement of more knowledge, and the cultivation of a broader and deeper intellectual culture, the masses of our common school teachers have not been affected as they should. They will fritter away their time in trifling pursuits. They seem to care nothing about progress. They are content if they succeed only in undergoing a passable examination, after a few weeks' hurried brightening up."

I shall now present some of the results of the last examination. Below are given the written answers to questions submitted to examinees in arithmetic, grammar, geography, history, algebra, physiology, natural philosophy, natural history, methods of teaching, and composition. Six sets of examination papers are selected, indiscriminately, out of about forty sets, care being taken that no two sets are from the same county. Every one of the candidates has received a first-grade county certificate upon the answers herewith given; and the percentage given by the County Board was high enough, in every case, to entitle the candidate to a first-grade State certificate, in case the State Board of Examination should indorse the markings of the County Board. It will be seen, then, that no unsuccessful candidate is represented; but that in every case, the candidate received the County Board's fullest indorsement for fitness to teach any school of the county. For the benefit of those not conversant with the present *modus operandi* of granting State certificates, it may be stated that the State Board holds no examinations, but leaves this work to the County Boards. An applicant for a State certificate must pass his examination before some County Board, and have his examination papers sent to the State Board, who reëxamine the papers, and grant a State certificate of a grade corresponding to the percentage reached. Eighty-five is the minimum percentage for a first-grade State certificate; eighty for a second-grade State certificate, and seventy-five for a third-grade State certificate.

The answers marked (*a*) belong to a candidate who, after passing through the public schools, attended a seminary for three years, and who taught in the latter for a year, and in the public schools one month. The answers marked (*b*) belong to a candidate who, after passing through the public schools, attended a high school for five years, and a normal school for five months, and who has taught in public schools nearly two years. The answers marked (*c*) belong to a candidate who, after attending one of the private schools called "institutes," for five years, attended a normal school for six months, and who has taught nearly three years and a half. The candidate whose answers are marked (*d*) taught in seminaries for about three years. Class of schools in which educated not given. The answers marked (*e*) belong to a candidate who, after passing through the common schools, attended a university for a year, and has taught in common schools for about five years. The answers marked (*f*) belong to a candidate educated in the common schools, and who has taught over two years.

The answer and work are given as nearly as possible *verbatim et literatem.* The capitalizing and punctuation, or rather want of punctuation, have been followed as closely as possible. But in many cases corrections had to be made in order to admit of having the copy printed. Where the sometimes abominable chirography left the spelling or meaning of the writer uncertain, he received always the benefit of any doubt.

The following rules and regulations, among others, are constantly before the candidate while passing his examination:

Write on only one side of each sheet of paper, number your pages, leave a margin, divide into paragraphs, and do not crowd your words. Paper is cheap; write in a large, legible hand, and thereby save the examiners much vexation of spirit, and yourselves some credits.

If you find a question that puzzles you, do not waste time in worrying over it, but pass over to the next, and return to it after you have answered the others.

Do not hurry; do not worry; do not get excited and nervous, but quietly write all you know about the subject.

In arithmetic, separate every operation by ruled lines across the page, or by a blank space. Make large figures, and do not mix up operations.

In grammar, use the briefest forms of parsing and analysis; and do not waste words on details. Any grammar, ancient, or modern, or antediluvian, will be recognized as authority.

Do not attempt to "cram" for the examination, for it will only confuse you.

Number all answers to correspond with the questions and subdivisions of questions.

After you have completed a paper, examine it carefully with reference to spelling, capitals, and punctuation. Any deficiencies in legibility of writing, correctness of spelling, punctuation and capital letters, subjects the examinee to a deduction of credits.

ARITHMETIC.

One Hundred Credits. Ten Questions, Ten Credits Each.

1. The shadow of a tree measures 84 feet. A staff 20 inches long casts a shadow of 9 inches at the same time. What is the height of the tree?

(*a*) 84 feet $\times$ 12 = 1008 in.
20 in. : ? : : 9 in. : 1008 in.
Ans.—186 feet, 8 inches.

(*b*) 84 feet = 1008 inches. And if a staff 20 inches long cast a shadow 9 inches long then $\frac{9}{20}$ of 1008 inches = 186$\frac{2}{3}$ feet hight of the tree.

(*c*) 20 in $\div$ 12 = 1$\frac{2}{3}$ ft = $\frac{5}{3}$
9 in $\div$ 12 = $\frac{3}{4}$ ft $\quad \frac{3}{4} \times \frac{5}{3} = \frac{9}{20} \times \frac{84}{1} = 37.8$ feet.

(*d*) 20 in : 9 in : : 84 ft.

$$20\overline{)756}\ \ 9$$

37$\frac{4}{5}$ ft $\quad$ 34$\frac{4}{5}$ ft Ans.

(*e*) 9 in $\div$ 1008 in : : 20 in : x
112 $\times$ 20 = 12)2240 in
186$\frac{8}{12} = \frac{2}{3}$. Ans 186$\frac{2}{3}$ ft height of tree.

(f) 9 : 20 : : 84 : 186⅔ ft.

84
20
9)680
186⅔

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2. Add ⅔ of a mile, ½ of a furlong and $\frac{3}{18}$ of a rod.

(a) ⅔ mi. × 8 fur. = $\frac{16}{3}$ fur. × 40 rd. = $\frac{640}{3}$ rd. ½ fur. × 40 rd. = $\frac{40}{2}$ rd. = 20 rd.; $\frac{640}{3}$ rd. + $\frac{20}{1}$ rd. + $\frac{3}{18}$ rd. = 233⅓ rd. Ans.

(b) ⅔ mi. = 213⅓ rds.; and ½ fur. = 20, and by adding these rods and fractions of rods we have 213⅓ rds. + 20 rd. + $\frac{3}{18}$ rd. = 233⅓ rds. Ans.

(c) ⅔ mi. ½ × ⅛ = $\frac{1}{16}$ fur. $\frac{3}{18}$ × ⅛ × $\frac{1}{40}$ = $\frac{1}{1920}$ + ⅔ + $\frac{1}{16}$ = $\frac{1680}{1920}$ + $\frac{1280}{1920}$ + $\frac{120}{1920}$ = $\frac{3080}{1920}$ = $1\frac{53}{96}$. Ans.

or

⅔ × $\frac{8}{1}$ = $\frac{16}{3}$ = 5⅓ fur.; ⅓ × $\frac{40}{1}$ = 13⅓ rods; ½ × $\frac{40}{1}$ = 20 rd.; $\frac{3}{18}$ rods = $\frac{1}{6}$; 5 fur. 13⅓ rods
20 + $\frac{1}{6}$

5 fur. 33⅓. Ans.

(d) Not solved.

(e)

⅔ of a mile =	5 fur.	13 rod	1 yd.	2 ft.	6 in.
½ of a furlong =		20 "	0 "	0 "	0 "
$\frac{3}{18}$ of a rod =				2 "	9 "
	5 "	33 "	2 "	2 "	3 "

(f) ⅔ m. = ⅔ × 8 = $\frac{16}{3}$ + ½ = $\frac{35}{6}$ fur.; $\frac{35}{6}$ fur. = $\frac{35}{6}$ × $\frac{40}{1}$ = $\frac{1400}{6}$ rods + $\frac{3}{18}$ = $\frac{1401}{6}$ = 233⅓ rods.

---

3. A sold B a farm and gained 20 per cent. B sold it to C and gained 10 per cent. C. sold it to D for $1,254 and lost 5 per cent. What did it cost A?

(a) .95)1254($1320 = What C paid for it.
1.10)1320(1200 = " B " " "
1.20)1200(1000 = " A " " "

(b) 5 per cent of $1254 = $62.70 + $1254 = $1316.70 cost C.
$1316.70—10 per cent, or $131.67 = $1185.03 cost B.
$1185.03—20 per cent, or $237.006 = $948.024 cost A.

(c) 1254 ÷ 95 = 1320 ÷ 110 = 1200 ÷ 120 = 1000 ans.
1.00 — .05 = 95.
1.00 + .10 = 1.10.
1.00 + .20 = 120.

(d) Not solved.

(*e*) C sold it to D for $1254, losing 5 per cent which is $1320.00 = what it cost C. B sold it to C gaining 10 per cent which is $1200.00 = what it cost B. A sold it to B gaining 20 per cent = $1000.00 = what it cost A.

(*f*) .95)1,254(1320 1.10)1320.00(1200. 1.20)1200(1000.

---

4. A receives $210, which was $\frac{7}{8}$ of B's portion; and three times C's portion was $\frac{1}{2}$ the whole estate. What was the value of the estate?

(*a*) If $210 = $\frac{7}{8}$ of B's portion, $\frac{1}{8}$ of $210. would equal $\frac{1}{8}$ of B's. $210 ÷ 2 = $105, if $105 = $\frac{1}{8}$ of B's, $\frac{8}{8}$ would equal 3 × $105 = $315 = all of B's. Then C's being $\frac{1}{2}$ of the whole estate would equal $105. Whole estate $210 + $315 + $105 = $630 Ans. A's and B's together would equal $\frac{5}{6}$ of the estate. If $525 is $\frac{5}{6}$, $\frac{1}{6}$ would be $\frac{1}{6}$ of $525 = $105 = C's share. Ans. 630.

(*b*) If A's was $210, then B's part (of which this is $\frac{7}{8}$) is $315; then 315 B's part + 210 A's = $525. $525 = A and B. I fail to understand the connection in the above.

(*c*)

2)210
105
3
315 B's

315 + 210 = 525

5)525
105
6
630

105
3
315
2
$630

(*d*) Not solved.

(*e*) C's = $\frac{1}{6}$ of the estate. B = $\frac{3}{6}$. A = $\frac{2}{3}$ of B = $\frac{2}{6}$ A had 210 = $\frac{2}{6}$ of the estate. If $\frac{2}{6}$ of the estate is $210, $\frac{1}{6}$ must be the half of 210 which is 105 and six sixes or the whole estate $630.

(*f*) 210 = $\frac{7}{8}$ of B's share. $\frac{1}{8}$ of B is = 210 ÷ 2 = 105 × $\frac{8}{8}$ = 315
210 + 315 = 525.
C's share is $\frac{1}{3} \times \frac{1}{2} = \frac{1}{6}$
$\frac{6}{6} - \frac{1}{6} = \frac{5}{6}$ which is A & B's share
$\frac{5}{6} : 525 : : \frac{6}{6} : 630$
5)525
105 × 6 = 630.

---

5. Analytical explanation of 12 divided by .06.

(*a*) In dividing a whole number by a decimal, you add as many ciphers to the whole number as there are figures in the decimal; point off as many places in the answer, as the decimal places in the divadend exceed those in the divisor. .06)12.00(200 Ans.

(*b*) 12 ÷ .06 = 12 × $\frac{100}{6}$: Now $\frac{1}{6}$ of $\frac{1}{2}$ = 2. and 100 × 2 = 200 ans.

(*c*) .06)12.00(2.00
12

(*d*) Not solved.

(*e*) 12 divided by .06 equals 12 divided by $\frac{6}{100}$ and 12 divided by $\frac{6}{100}$ is one hundred times twelve divided by six which is 200 Ans.

(*f*) Dividing by a fraction is equal to multiplying by its reciprocal, and .06 = $\frac{6}{100}$
12 ÷ $\frac{6}{100}$ = 12 × $\frac{100}{6}$ = 200. or .06)12.00(200

---

6. Compound interest of $600 for 3 years and 4 months at 10 per cent.

(*a*) $600. × .10 = $60.00 = the interest for the first year $600 + $60. = $660. = principal 2d yr.

600
$660.

$660. × .10 = $66.00 = the interest for the second year $660 + $66. = $726 principal for 3d year.

660.
$726.

$726. × 10 = $72.60 = the interest for the third year $726 + 72.60 = 798.60 = principal 4th year.

72.60
798.60

$798 60 + .10 = $26.6200 = the interest for four months $798.60 + 26.62 = $825.22 = final principal.

26.62
825.22

$825.22 — $600 = $225.22 Ans. = compound interest.
600.00
$225.22 Ans.

(*b*) $600 for 1 yr. at 10 per cent = $60.
$600 + $60 = $660. And $660 at 10 per cent for 1 yr. = $66 + $660. = $726.
$726 at 10 per cent = 72.60 + $726 = $798.60 Amt for three yrs.
$798.60 for four mo = $26 62 + $798.60 + 26.62 = $825.22 — $600 = $225.22 Compound Interest.

(*c*) 600 × .10 = 60.00 + 600 = 660 × .10 = 66 + 660 = 726 × .10 = 72.60 = 726 + 72.60 = 798.60. 798.60 × .10 = 79.8600 ÷ 12 = 6.655 + 4 = 26.620
798. 60
$825.22 Ans.

(*d*) Not solved.

(*e*) Prin. 600.00 = 3 | ½ | 36.00
1 | ⅓ | 18.00
6.00
60.00 1 yr. int.
600
660.00 2nd yr. prin.

660.00
.06
39.60
3 | ½ | 19.80
1 | ⅓ | 6.60
66.00 2nd yr. int.
660.00
726.00 3 yr. pr.

726,00
.06
43.56
3 | ½ | 21.78
1 | ⅓ | 7.26
72.60 3d yr. int.
726.00
798.60 4th yr. pr.

798.60
.06
4 | ⅓ | 47.916
15.972
3 | ½ | 7.986
1 | ⅓ | 2.662
26.62 4th yr. int.
798.60
825.22 Amount.

(*f*) $600 First principal
10

60.00
600

660.00 Sec'd "
10

66.00
660

726.00 Third "
10

72.60
726

798.6 Fourth "
10

3)79,8.60
——— Iterest for 4 months.
26.62
798.62

825.22 amt.
600

225.22 Compound Interest.

---

7. Solve both by proportion and analysis. What will 11 lbs. 4 oz. of tea cost, if 3 lbs. 12 oz. cost $3.50?

(*a*) 11 lb. 4 oz. = 180 oz. 3 lb. 12 oz = 60 oz.
1. 60 oz. : 180 oz. : : $3.50 : ? Ans. $10.50.
2. If 60 oz. cost $3.50, one oz. would cost $\frac{1}{60}$ of $3.50, or .058$\frac{1}{3}$. If one oz. cost .058$\frac{1}{3}$, 11 lb. 4 oz., or 180 oz. would cost 180 times .058$\frac{1}{3}$ or $10.50 Ans.

(*b*) 11 lbs. 4 oz = 180 oz. and 3 lbs. 12 oz. = 60 oz.
If 60 oz cost $3.50 one oz will cost $ .05$\frac{5}{6}$. If 1 oz cost $ .05$\frac{5}{6}$. 180 oz will cost .05$\frac{5}{6}$ times 180 oz or $10.50.

(*c*) 11 lbs. 4 oz =

3 lbs—12 oz

4 ÷ 16 = .25 + 11 = 11.25. 12 ÷ 16 = .75 + 3 = 3.75

3.50 ÷ $3.75 = .93 × 11.25 = $10.4625 Ans.

lbs	lbs	$	$
3.75	: 11.25	: : 3.50	: x

11.25 × 3.50 ÷ 375 = $10.4625 Ans.

(*d*) If 3 lbs. 12 oz cost \$3.50, 11 lbs 4 oz will cost more,

lbs	oz		lbs.	oz		\$
so as 3	12	:	11.	4	: :	3.50
16			16			100
60			180			350
						180
						60)63000
						100)1050
						10.50 cts.

\$ c

(*e*) As 3 lbs. 12 oz : 11 lbs. 4 oz : : 3.50 : x

$3 \times 350 = 10.50$ Ans $= x$

Again if $3\frac{3}{4}$ lbs of tea cost 3.50; $11\frac{1}{4}$ lbs will cost just three times as much as $3\frac{3}{4}$ lbs which is three times \$3.50 equals 10.50 Ans.

(*f*) 3 lbs. $= 3 \times 16 = 48 + 12 = 60$ oz.
11 lbs $= 11 \times 16\ 176 + 4 = 180$ ..
60 : 180 : : 3.50 : 10.50

Since 60 oz cost 3.50, one oz will cost $60)3.50 = .58\frac{1}{3}$. and 180 will cost $180 \times .58\frac{1}{3} =$ \$10.50

---

8. A invested \$10,000 in business, on which he lost 15 per cent. He then invested the remainder and gained 20 per cent. What per cent did he gain in the two investments?

(*a*) \$10,000 $\times$ .15 = \$1500.00 = what A lost in the first investment. \$10,000 — \$1,500 = what he had left, = \$10,000 — 1,500 = 8500.
\$8,500 $\times$ .20 = \$1700.00 = what he gained second investment.
\$1700 — \$1,500 = \$200 = whole gain on both investments.
\$200 = .02 of \$10,000. 10,000)200.00(.02 = Ans.

(*b*) 15 per cent of \$10,000 = \$1500 and \$10,000 — \$1500 = \$8,500, and 20 per cent \$8,500 = \$1700 — \$1500 = \$200 gain.

(*c*) \$10000 $\times$ .85 = \$8500.00
100 — 15 = .85
8500 $\times$ 1.20 = 10,200 $\div$ \$10000 = 98 per ct.

(*d*) Not solved.

(*e*) 10,000 — .15 = 8500 gained 20 per cent

15	1.20
1500.00	10200.
	10200)10000(.9+

Ans. gained over 9 per cent.

(*f*) \$10,000 — 1500 = 8,500

15	20
1,500.00	1700.00
8,500 + 1700 =	10200
	10000
	200

10,000)20,000 = .2 per cent

9. What amount of stock can be bought for $4,841, allowing 3 per cent commission.

(*a*) 1.03)4841.00(4700. Ans.

(*b*) 3 per cent is $1.03 for each 100 of the whole amt. Therefore to find the commission we divide $4,841 by 1.03)4841 ÷ $1.03 = $4700 and $4841 — $4700 = $141.00 commission.

(*c*) $4841 — 145.23 = 4695.77 ÷ 100 = 46.9577 shares.

.03

145.23

(*d*) Not solved.

(*e*) 1.03)4841.00($4.700 Ans.

(*f*) 1.03)4841.00($4.700

---

10. How much currency can be bought for $150 in gold when gold is at 115 per cent, and what is the value of greenbacks when gold has the above valuation?

(*a*) If one dollar in gold is worth $1.15, $150 would be worth 150 times as much or $172.50 = the amount of currency that can be bought for $150.

1.15 $1.15 — .1725 = .9775 or .97¾ = value of greenbacks.

.15

.1725

(*b*) When gold sells at 115 per cent greenbacks are worth .85. Therefore if .85 cts buy $100 in greenbacks then $150 in gold will buy as many dollars in currency as .85 cts is contained times in $150 = $176.47+.

(*c*) $150 × 1.15 = $182.50 1.00 ÷ 1.15 = 86.

(*d*) Not solved.

(*e*) 150 greenbacks are worth .86$\frac{2}{23}$

1.15

$172.50 Currency.

(*f*) 150 × 1.15 = 172.50.

$100 ÷ 1.15 = 86.95+

ALGEBRA.

Ten Questions—Five Credits Each.

[No Credits allowed unless operations are performed in full.]

1. To subtract one quantity from another, conceive the signs of the *former* to be changed, and proceed as in Addition. Prove the correctness of this rule.

(*a*)
$$\begin{array}{r} 7x + 9y^2 - 8bc \\ 3x - 6y^2 + 3bc - 8 \\ \hline 4x + 15y^2 - 11bc + 8 \end{array}$$

(*b*) To subtract in algebra is not in all cases to diminish. A positive and negative quantity are in opposite or counted in opposite conditions. Hence the difference or space between them is their apparent sum. If we demand the difference of latitude between 7 degrees north and 4 degrees south the answer is $7 + 4 = 11$ degrees an opperaetion which appears like addition. But 11 degrees N. and 7 degrees N. we must change the sign of the Sub. From this that a *positive* term is subtracted by changing its sign to *minus* and a negative *term* by changing its sign to *plus*.

(*c*) A man sails two miles north, and another three miles south; how far apart are they? Here it is necessary to change the direction in which it is applied in order to find the difference this is done by changing the sign of the subtrahend, or the -3 to $+3$.

(*d*) No algebra.

(*e*) We change the signs merely to show that the signs so changed or the quantity having the signs so changed is to be subtracted. If we did not change the signs we would have addition.

(*f*) Suppose that 3 be subtracted from 6 it would leave 3 or if we do not wish to perform the opperation we can indicate it by prefixing — to 3 thus $6 - 3 = +3$ or 3.

now if we conceive the sign the sign — to and perform the operation according to this conception the result will be the same and as in addition like quantities are to be added and unlike subtracted so all the signes must be changed as subtraction is the opposite of division.

---

2. Prove $-x \times -x = +x^2$; and that $-x \times +x = -x^2$.

(*a*) Like signs produce plus and unlike signs minus; therefore in $-x \times -x$ the two minus signs would produce $+$ and $x + x$ would equal x^2. Unlike signs produce minus $-$ by $+$ would give minus and $x \times x = x^2$ therefore $-x \times +x = -x^2$.

(*b.*) (*a.*). (1) $-x+x=0$
(2) $(-x)\times(+x)-x^2=0=(1)\times(+x)$
(3) $(-x\times(-x)=+x^2=(2)\times(+x^2)$
Or $-x\times+x=+x^2$
(*b.*). (1) $-x+x=0$
(2) $-x\times(+x)+x^2=0=(1)\times(\times x)$
(3) $-x\times(+x)=-x^2=(2)+(+x^2)$
Or $-x\times+x=-x^2$

(*c*) $-x\times-x=+x^2$. The minus sign of the multiplier shows that the multiplicand, $-x$, is to be subtracted from the multiplier this is done by changing the sign of the multiplicand, consequently we have $+x^2$. $-x\times+x=-x^2$. The plus sign of the multiplier shows that the multiplicand, $-x$, is to be added to the multiplier which does not change its sign, therefore minus x multiplied by a plus x gives minus x^2.

(*d*) No algebra.

(*e*) $-x\times-\times=+\times^2$. Here x is to be subtracted x times, that is, $-x^2$ is to be subtracted; but subtracting $-ab$ is the same as adding $+ab$; therefore we have to add $+ab$.
$+x\times x=-x^2$, for a quantity is said to be multiplied by a negative number $-x$, if it be subtracted x times; and x subtracted x times is $-x^2$.

(*f*) Suppose to illustrate that 0 to be the Equator then the degrees of latitude on one side is minus to those on the other then let x represent a degree of longitude on the north, and $-x$ a degree on the South supose a ship to start from x and travel to $-x$; it is now at $-x$ yet it has moved over $x\times x$ degrees hence $x\times-x=-x^2$; If the ship still continue to travel S one degree its latitude wold be indicated by $-x\times-x=+x^2$.

---

3. Prove that $x^0=1$.

(*a*) x^0 does not equal one, therefore cannot prove it.

(*b*) $a^0=1$. $\frac{a^3}{a^3}=1$ and $\frac{a^3}{a^3}=a^0$.
therefore $a^0=1$.

(*c*) $\frac{x}{x}=x^{1-1}=x^0$.

$\frac{x}{x}=1$ any quantity divided by itself is equal to one.

(*d*) No algebra.

(*e*) Not solved.

(*f*) $\frac{x^n}{x^n}=1$ suppos that $m-n$ then $\frac{x^m}{x^n}=1$ then $\frac{x^m}{x^n}=x^{m-n}=x^0=1$.

$$\frac{-x}{1-5x}=\frac{3x}{5-x}$$

$$-5=x^2=3x-15x^2$$

$$x^2-3x=15x^2=5$$

$$16x^2-3x=5$$

$$16x^2-3x=5$$

$$x^2-\frac{3x}{16}=\frac{5}{16}$$

$$x^2-\frac{3x}{16}=\frac{9}{1024}=\frac{9}{1024}+\frac{5}{16}=\frac{9}{1024}+\frac{40}{1024}=\frac{49}{1024}$$

$$x-\frac{3}{32}=\frac{7}{32}$$

$$x=\frac{7}{32}+\frac{3}{32}=\frac{10}{32}$$

$$x=\frac{5}{16} \qquad y=\frac{\frac{15}{16}}{\frac{75}{16}}=\frac{15}{75}=\frac{1}{5},\ y=\tfrac{1}{5}$$

$$x=\frac{5}{16} \qquad y=\tfrac{1}{5}$$

(*b*) $\frac{1}{x}+\frac{1}{y}=5=x+y=5xy$ (x by 3.

$$\frac{5}{x}-\frac{3}{y}=1=5y-3x=xy$$

$$+3y+3x=15xy$$

$$2y=16xy$$

$$y=8x$$

$$x+8x=5xy$$

$$x=3y$$

(*c*) (1) $\frac{1}{x}+\frac{1}{y}=5$

2 $\frac{5}{x}-\frac{3}{y}=1$

Multiplying (1) by 5 we have $\frac{5}{x}+\frac{5}{y}=25$

Subtracting (1) from (2) we have

$$\frac{5}{x}-\frac{3}{y}=1$$

$$\frac{5}{x}+\frac{5}{y}=25$$

$$-\frac{8}{y}=-24, \text{ or } \frac{8}{y}=24, \text{ or } y=3$$

Multiplying (1) by 3 we have $\frac{3}{y}+\frac{3}{x}=15$

Subtracting (1) from (2) we have

$$\frac{5}{x} - \frac{3}{y} = 1$$
$$\frac{3}{x} + \frac{3}{y} = 15$$
$$\frac{8}{x} = 16$$
$$6 = 2$$

(*d*) No algebra.

(*e*) $\frac{1}{x} + \frac{1}{y} = 5$

$\frac{5}{x} - \frac{3}{y} = 1$

$$\left\{\begin{array}{l} y + x = 5xy \\ 5y - 3x = xy \end{array}\right.$$

$$\begin{array}{r} 3y + 3x = 15xy \\ 5y - 3x = \quad xy \\ \hline 8y = 16xy \\ y = 2x \end{array} \qquad \begin{array}{r} 5y + 5x = 25xy \\ 5y - 3x = \quad xy \\ \hline 8x = 24xy \\ x = 3xy \end{array}$$

(*f*) (1) $\frac{1}{x} + \frac{1}{y} = 5$

(2) $\frac{5}{x} + \frac{5}{y} = 25$

(3) $\frac{5}{x} - \frac{3}{y} = 1$

$$\frac{8}{y} = 24$$
$$\frac{1}{y} = 3$$
$$1 = 3y$$
$$y = \tfrac{1}{3}$$
$$x = \tfrac{1}{2}$$

GRAMMAR.

One Hundred Credits; Ten Questions, Ten Credits Each.

1. Write a synopsis of the indicative mode of the verb lie (to recline), giving only those persons and numbers of each tense in which the verb changes its form to agree with the form of its subject.

	Present tense = lie		Preterit tense = lay.		Perfect = lain or have lain	
	Sing.	Plu.	Sing.	Plu.	Sing.	Plu.
(a)	1. ———	1. ——	1. ———	1. ——	1. ———	1. ——
	2. Thou liest	2. ——	2. Thou laid	2. ——	2. Thou hast lain	2. ——
	3. He lies	3. ——	3. He "	3. ——	3. He has "	3. ——

(b)	I lie	I lay	I have lain	I had lain	I shall lay	I shall have lain
	He lies	He lay	He has "	He " "	He " "	He " " "
	We lie	We lay	We have "	We " "	We " "	We " " "
	You lie	You lay	You " "	You " "	You " "	You " " "
	They lie	They lay	They " "	They " "	They " "	They " " "

(c) Present tense 2 per. Sing. Thou liest 3 per. Sing. He lies
Imperfect " " " " " laidst
Perfect " " " " " had lain " " " He has lain
Plu-perfect " " " " " hadst "
1. Future " " " " " wilt lie
2. " " " " " " " have lain

(d)

Ind. Pres.	Ind. Past.	Ind. Perft.
I lie	I lay	I have lain
He lies	He lay	He has "

Plu. perfect	1st Future.	2nd Future.
I had lain	I shall lie	I shall have lain
He had lain	He shall lie	He shall have lain

Pres. Participle lying Past Partc. lain.

(e) Pres. Ind. 1st. Sing. I lie.
2d. " Thou liest
3d. " He lies

Pres. Perf. 1st. " I have lain
2d. " Thou hast lain

(f)

First Person sing.

I lie; I lay; I have lain; I had lain; I shall lie; I shall have lain.

Second Person Sing'r.

Thou liest; Thou layst; Thou hast lain; Thou hadst lain; Thou wilt lie; Thou wilt have lain

Third Person Sing'r.

He lies; he lay; he has lain; he had lain; he will lie; he will have lain

First Person Plural.

We lie; we lay; we have lain; we had lain; we shall lie; we shall have lain

Sec Person Pl.

You lie; you lay; you have lain; you had lain; you will lie; you will have lain

Third Person Pl.

They lie; they lay; they have lain; they had lain; they will lie; they will have lain

Sec. Person Sin.

Thou liest; thou layst; thou hast lain; thou hadst lain; thou wilt lie; thou wilt have lain

Third Per. Sin.

He lies; he has lain

I have given the changes of the auxileres as well as the principal verb

2. Write (1) a simple sentence containing an adjective phrase and an adverbial phrase, (2) a complex sentence containing an adjective clause and an adverbial clause, (3) a compound sentence consisting of two simple members. Expand one of the phrases of your simple sentence into a clause, and contract your compound sentence into a simple sentence.

(*a*) 1. In the world the good have much tribulation. 2. While here, the sailor and soldier gave much proof of bravery. 3. You want one, but Mary does not. While in the world, the good have much tribulation.

(*b*). (1.) This being the day of election all Voters in San Diego will have the privilege of voting. (2) Is this the person that I saw some two years since. (3.) John came home and Chas. went visiting. (4.) All voters will cast their vote. (5.) John came home when Chas went visiting.

(*c*). 1.a.Some people of Europe live on the Rhine. 2.b. James who goes to school ran on the mountains where he lives. 3. James is a good boy, and he studies diligently. 4. of Europe=Who are of Europe. The good boy James studies diligently.

(*d*)(1)To be good is to be happy & how often do we labor to attain this end.
(2) That my fondest hopes rested on his integrity, you were fully aware.
(3) To-day we are here, & to-morrow knoweth us not.
Goodness is happiness for which our labour is in vain.

(*e*)(1)John, being very active, did it as quickly, as James.(2).Charles is a doctor, and John is studying law.(3) John is studying law and succeeding admirably.
(4) John studies law, under Charles a doctor.

(*f*). (1)The man of fortune lives in a palace
(2.) The man who possesses fortune lives where he pleases
(3). Joel is rich and, James is poor
(4). The man who lives in a palace
(5). With all of Joel's riches James is poor

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3. Correct all the errors in the following expressions:

(*a*) Have either of your three brothers returned?
(*b*) I wanted to have gone to Vienna last month, but I do not wish to now.
(*c*) He said he done it like I done it. but I seen him do it differently.
(*d*) But if it climb, with your assisting hands,
The Trojan walls, and in the city stands.
(*e*) Severe the doom that length of days impose
To stand sad witness of unnumbered woes.

(A) (*a*) Has either of your three brothers returned?
(*b*) I wanted to go to Vienna last month, but do not wish to now.
(*c*) He said he did it like I did, but I saw him do it differently.

(*d*) But if it climb, with your assisting hands,
The Trojan walls, and in the city stand.
(*e*) Severe the doom that length of days imposes
To stand sad witness of unnumbered woes.

(B) (*a*) Have neither of your three brothers returned.
(*b*) I wanted to go to Vienna last month, but I do not wish to go now.
(*c*) He said he did it like I did it but I saw him do it differently.
(*d*) But if it climb with your assisting hands,
The Trojan walls, and in the city stand.

(C) (*a*) Have either of your three brothers returned?
(*b*) I wanted to have gone to Vienna last month, but I did not wish to now.
(*c*) He said he did it like I did it, but I saw him do it differently.
(*d*) But if it climbs, with your assisting hands,
The Trojan walls, and in the city stands.
(*e*) Severe the doom that length of days impose
To stand sad witnesses of unnumbered woes.

(D) (*a*) Has either of your brothers returned?
(*b*) I wanted to go to Vienna last month, but I do not wish to now.
(*c*) He said he did it as I did it, but I saw him do it differently.
(*d*) But if it climb with yours assisting hands,
The Trojan walls in the city stand.
(*e*) Severe the doom that length of days imposes
To stand sad witness of unnumbered woes.

(E) (*a*) Has either of your three brothers returned?
(*b*) I wanted to go to Vienna last month, but I do not wish to now.
(*c*) He said he did it like I did, but I saw him do it differently.
(*d*) But if it climb, with your assisting hands,
The Trojan walls, and in the city stand.
(*e*) Severe the doom that length of days impose,
To stand sad witnesses of unnumbered woes.

(F) (*b*) I wanted to go to Vienna last month, but I do not wish to go now
(*c*) He said he did it as I did, but I saw him do it differently
(*d*) But if it climb, with your assisting hands,
The Trojan walls, and in the city stand
(*e*) Severe the doom that length of days imposes
To stand sad witness of unnumbered woes.

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4. "He scarce had finished when such murmur filled
Th' assembly, as when hollow rocks retain
The sound of blustering winds, which all night long
Had roused the sea."

(*a*) What kind of a sentence is this?
(*b*) Give the principal subject and the principal predicate of the sentence.

(*c*) What kind of a clause is *when hollow rocks*, etc.? What does it limit?
(*d*) Parse *scarce* and *had roused.*
(*e*) Parse *as* and *night.*

(A) (*a*) A compound declarative sentence.
(*b*) *He* is the principal subject and *had finished* the predicate.
(*c*) "When hollow rocks," is an adverbial clause and limits retain.
(*d*) "*Scarce*" is an adverb of time qualifying had finished. Had roused is an active transitive, regular, indicative, pluperfect verb, third person and plural number to agree with its subject which.
(*e*) *As* is a conjunctive adverb, connecting the first and second sentences. Night is a common noun, third person, singular number, neuter gender, and objective case after of understood.

(B) (*a*) This is a complex declarative sentence.
(*b*) S. He. Predicate had finished,
(*c*) Adverbial. It limits. (When such murmur fill the assembly.
(*d*) Scarce is an adverb, limiting had finished. Had roused is a verb in the Indicative Mood imperfect Tense, and has *sound* for its subject.
(*e*) As is a conjunction and connects the parts of the sentence.
Night is a noun and the leading word in the phrase (*all* night long,

(C) (a) Declarative, and also complex.
(b) He— Subject. Had finished Predicate.
(c) Adverbial clause. It limits the adverbial clause when such murmur filled th' assembly.
(d) scarce is an adverb of time modifies had finished. Rule ——. Adverbs modify verbs, adjectives and other adverbs.
Had roused is a verb. Active-transitive, regular verb, Indicative mood, Pluperfect tense, third person, plural number, to agree with its subject winds. Rule ——. A finite verb must agree with its subject nominative in number and person.
(e) as is equivalent to like is used as a preposition showing the relation between the rest of the clause and filled. Night is used here as an adverb modifying long.

(D) (a) A compound declarative sentence.
(b) *He*, principal and *had finished*, principal predicate.
(c) An independent clause and limits first clause.
(d) An adverb and qualifies had finished.
Had past tense of the auxilliary *to have, roused*, perfect participle of the act verb to rouse *had roused* an *act trans* verb, governing sea in the objective case.
(e) *As*, a conjunction, *night*, an adverb of time.

(E) (a) Complex.
(b) *He. Had finished.*
(c) Adjective. Retain.
(d) Scarce. Adv. modifies, had finished. Had roused. —— verb, Act Trans. Reg. 3rd plural Past Perf Ind. subject which, relating to winds.
(e) As. Conj. connects the two sentences.

Nights—is a noun, neu. 3rd sing and Obj case after a preposition understood (*during*).

(F) (a) Complex declarative.
(b) He; S P had finished.
(c) Adverbial (2) It limits filled
(d) Scarce is an adjective used as an adverb.
(2) Had roused is a regular active transitive verb of the indicitive mood pluperfect tense, and agrees with subjec in third person singular no.
(e) as is a conjunctive adverb and connects clauses.
(2) Night is a common noun third person singular number nuter gender and objective case by a preposition understood

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5. How is the progressive form of a verb distinguished from the passive form?
Give a synopsis of the verb *see* in the potential mode, passive voice, third person.

(A) The progessive verb is formed by prefixing one of the ten variations of the neuter verb be, to the *present* participle of an active verb, either transitive or intransitive. The passive verb is formed by prefixing one of the ten variations of the neuter verb be, to the perfect participle of an active transitive verb.

Present tense.	Preterit tense.	Perfect tense.
He can be seen.	He could be seen.	He may have been seen.

(B (a) By the auxiliary verb.
(b) They may be seeing. They might be seeing. They may be have seeing. They might have been seeing.

(C) The progressive form requires the verb be, and the addition of ing to the principal verb. The passive requires be to be used but the principal verb does not take ing.

		Plural.
He may be seen	Present tense 3 Sing	They may be seen
He might be seen	Imperfect " " "	" might " "
He may have been seen	perfect " " "	" may have been seen
" might " " "	Pluperfect " " "	" might " " "

(D) The progressive is formed by an auxilliary & the pres. participle, for ex. She *is writing*. Passive is formed by placing the object before the verb & the agent after it preceded by the preposition *by*, as John was struck by James

(E) By the ending *ing*.
He may can or must be seen.
They may, can or must be seen
He may, can, or must have been seen.
He might be seen.
They might, could, would or should be seen.

He might, would &c. have been seen.
They might, &c have been seen.

(F) The progressive is the imperfect participle used with auxileries to form the tenses; while the passive form is the perfect participle used in the same manner with the addition of the verb to be with with its variations.

Sin. He may be seen; he might be seen he may have been seen, he might have been seen.

Pl. they may be seen, they might be seen, they may have been seen they might have been seen

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6. Why do nouns and pronouns change their forms? Illustrate and explain the principal changes which they undergo.

(a) Nouns change their form to agree with the different numbers, genders, and cases; as singular, fly; plural, flies; masculine, actor; feminine, actress; nominative, boy; possessive, boy's. The pronouns change their forms to agree with the different persons; as,

Singular.	Plural.
Nom. I.	Nom. We.
Poss. My or mine.	Poss. Our or ours.
Obj. Me.	Obj. Us.

(b) To represent the different persons, numbers, and genders. We change I, 1st person, to thou to make the 2nd person, and *He* of the Masculine Gender to *She* for the feminine.

(c) Nouns and pronouns change their form to show whether one or more than one is meant, or what gender is meant, also to show what relation they bear to other words in a sentence. In the number the singular tree is used when one is meant but when we wish to speak of more than one we use the plural trees. Count is masculine but when we wish to speak of the feminine we say countess. As regards retion of words in the sentence He reads we show the relation of the pronoun to its verb, but in the sentence he reads his book we change the form of he to his because it denotes a different relation that of possession.

(d) Nouns and pronouns change their form to distinguish the gender and case. He, His. She, Her. Me, Mine. They, Theirs, Them.

(e) In order to be inflected John John's Lady Ladies, &c. Gender, number case & person.

(f) Nouns to express different persons, number & cases. (2) Pronouns Per. no. gen. & case.
1 per. sing Nom. I Pos' my or mine. Obj. me
pl. nom. we Pos. our or ours Obj us.
(2) Second person sin
Nom. thou, Pos. thy or thine Obj. thee
Plu. nom. ye or you pos. you or yours, obj. you

Third Person pl.
Nom. they obj. their or theirs, obj. them
1 First per. Sin. nom by, pos' boy's obj. boy
pl. nom boys pos boys' obj. boys

7. What double offices do relative pronouns and relative adverbs perform? Illustrate by examples. Decline the simple relative pronouns.

(*a.*) They each perform they own office, and also that of a conjunction. The man *who* died was blind. They will go *when* they can.

Sing. and Plu.	Sing. and Plu.	Sing. and Plu.
Nom. Who	Nom. Which	Nom. That
Poss. Whose	Poss. Whose	Poss. ——
Obj. Whom.	Obj. Which	Obj. That.

(*b.*) (1.) The office of a pronoun and connective.
(2.) This is the man who was here to-day Here *who* is a relative pronoun and also the connective word.

(3.)	Nom Who.	Poss whose	Obj Whom
	" Which	" ——	" Which
	" That	" ——	" That.
	" What	" ——	" What.

(*c.*) Relative pronoun may be used as a pronoun and to connect sentences. The same of adverbs I like them that like me is a saying.

Singu	Plu	Sing.	Plu.	
Non who	whose	which	which	
Poss. whose	"	wanting	wanting	
Objc. whom	whom	which	which	
Non. that	that	what	what	
Poss. wanting	wanting	wanting	wanting	
Obj. that	that	What	what	Brown.

(*d*) Relative pronouns & adverbs perform the offices of Nominatives, possessives & Objectives.

Who took it?	*Who's is this?*	*To whom did you give it?*
Nom	who.	which, that.
Poss.	who's,	
Object.	whom,	which that.

(*e*) Interrogatives. Who did it? How did he go? What do you want? &c.

Who	whose	whom
which	whose	which
Which	whose	which
"	"	"
What	——	what
"		"
That	——	that
"		"

(*f*) Relative pronouns & relative adverbs perform the office of conjunctions & pronouns or adverbs What I do I shall do quickly I shall commence teaching again when I return home. here *what* is a

relative pronoun & connects clauses & *when* is a conjunctive adverb & also the dependent clause to the principal one

Third per. sin.

	nom	who	pos.	whose,	obj.	whom
Pl.	"	"	"	"	"	"
sin	nom.	what,	pos	(——)	obj.	what
Pl.	"	"	"	(——)	"	"
sin	"	which	"	(——)	"	which
pl.	"	"	"	(——)	"	"
sin.	"	that	"	(——)	"	that
pl.	"	"	"	(——)	"	"

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8. What kind of adjectives admit of comparison? How are they compared? Compare next, last, eldest, dead, and worst.

(*a*) Qualifying adjectives admit of comparison. The simple adjectives are compared by adding *er* to the positive to form the comparative; and *est* " " " " " " superlative.

Pos. Near	Pos. Old	Pos Bad
Com. Nearer	Com. Elder	Com. Worse.
Sup. Next.	Sup. Eldest	Sup. Worst.

Last and dead cannot be compared.

(*b*) (1) Those expressing quality. (3) By means of adverbs.
Near, nearer nearest Late, later, last.
Old, Older, Oldest, or Eldest
Dead, deader, deadest.
Bad worse worst.

(*c*) Those that do not already express the highest quality of a thing. By the addition of er to the comparative or est to the superlative. Or by placing more or less before the comparative and most and least before the superlative.

Positive	Near	Comparative	nearer	Super.	nearest or next
"	late	"	later	"	later or last
"	old	"	older	"	oldest or eldest.
"	Dead can not be compared.				
"	Worse			Super.	Worst.

(*d*) Adjectives of quality & quantity, they are compared by more and most.

Near, nearer, nearest or next.
Late, later or latter, lastest or last.
Old older or eldest, odest or eldest
D — —
Bad, worse, worst.

(*e*) Those that express the same quality in different degrees. By adding *er* for the comparative and *est* for the superlative.

Pos	Comp.	Sup
near	nearer	nearest or next
late	later	latest or last
old	older or elder	oldest or eldest
Bad, evil or ill	worse	worst

dead cannot be compared. By more & most or less & least

(*f*) Those whose meaning admits of different degrees of expression (2) by adding er or est to the positive & also by the use of more & most or less & least

near,	nearer	next or nearest
late	later	last,
eld or old	elder or older	eldest or oldest
dead not comparable		
ill or bad	wores,	worst

9. When should the subjunctive form of the verb be used in conditional clauses? Give rules for the correct use of shall and will when used to denote future time.

(*a.*) The subjunctive mode is used in those clauses that express doubt or uncertainty. *Shall* denotes futurity and *will* determination.

(*b.*) Because subjunctive form denotes condition or supposition.
Shall is used when purpose to do a thing is meant.
Will is used to denote the intention to do a thing regardless of any opposition

(*c*) In conditional cases assumed as a fact.
Will in the first person and shall in the second and third denote futurity, but shall in the first and will in the second and third denote determination.

(*d*). When possibility, power, or liberty is expressed.
Shall signifies in the 1st per. intention, in the 2nd pers. determination or command.

(*e*). (*a*) When there is a doubt expressed. (*b*) Shall expresses a certainty Will a resolution.

(*f.*) When the condition expressed is doubtfull
When used merely to express futurity shall should be used in the first person & will in the sec. & third; but when a determination expressed this order is reversed

10. Construct a complex declarative sentence out of the following statements:
(*a*) I have an indifferent opinion of the vulgar.
(*b*) Some merit raises the shout of the vulgar.
(*c*) I am ever led to suspect that merit.
(*d*) This I own.

(*a*) I have an indifferent opinion of that vulgar, although merit raises their shout and being led to suspect this am compelled to own it.
(*b*) I own that I am ever led, by my indifferent opinion of the vulgar to suspect the merit which raises that shout.
(*c*) a. I who read have an indifferent opinion of the vulgar. b. Some merit raises the shout of the vulgar who form the common mass.
c. I who have none myself am ever led to suspect that merit.
d. This I who write own.
(*d*) Omitted.

(*e*) I have an indifferent opinion for the shout of the vulgar. Though am led to own that merit is sometimes the cause of it.
(*f*) This I own, that I have an indifferen opinion of the vulgar; yet some merit, though inferior, will sometimes raise their shout

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GEOGRAPHY.

One hundred credits; ten questions, ten credits each.

1. Name five mountain ranges, five great cities, and five great rivers in Asia.

(*a*) Altai, Himilyia, Ural, Caucasian, Hoonovoy—Pekin, Calcutta, Lassa, Yeddo, Mecca, Jerusalem.
Obi, Lena, Amoor, Indus, Cambodia.
(*b*) (1.) Himalayah, Altai, Tarsus, Hindoo Coosh, Ural.
(2.) Pekin, Shanghai, Bon, Sing sing.
(3.) Obi Lena Ho Angho Ganges Cambodia, Yenasae.
(*c*) a. Himalaya, Altai, Thian Shan, Kuen Leun, East and Western Ghauts. b. Pekin, Canton, Singapore, Mecca, Jerusalem. Amoor, Yang-tse-kiang, Hoang-ho, Lena, Obi.
(*d*) Himalaya, Ural, Hindoo-Coosh, Aajish and Taurus. St. Petersburg, Pekin, Jeddo, Moscow and Calcutta. Ganges, Indus, Obi, Yang-tse-kiang and Hoang-ho.
(*e*) (1). Himalaya, Altai, Yabloui East Ghauts and West Ghauts. (2) Pekin, Canton, Nankin, Hong Kong and Hoang Ho. (3) Ganges, Amoor, Yenesei, Hoang Ho and Indus.
(*f*). (1) Himalaya, Altai, Kuenlun, Ghants, Stanovoy.
(2) Nankin, Yeddo, Pekin, Changchow.
(3) Yang-tze-Kiang, Yenisei, Obe, Cambodia Hoang-ho.

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2. Name all the seas bordering on Europe.

(*a*) Caspian, Black, Meditterranean, Adriatic, North, and Baltic.
(*b*) North Sea, Mediterranean, Caspian, Black White Archipelago, Azov.
(*c*) Adriatic, Black, Meditteranean, North Sea.
(*d*) Black sea, Baltic sea, North sea, & Adriatic sea.
(*e*) White, Black, Caspian, Marmora, Mediterranean, North Sea and Baltic. Agean and Adriatic.
(*f*) North Sea, Mediterranian, Adriatic, Sea of Azor, Archipeligo, Black Sea, Caspian, & White Seas

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3. Name the two largest rivers and two largest cities of Europe.

(*a.*) Danube and Rhine; London and Paris.
(*b*) (*a.*) Danube Dneiper, (*b.*) London and Liverpool.
(*c*) *a.* Volga, Danube. *b.* London, Paris.
(*d*). London & Paris, & Rhine & Maine (or Rhone)

(*e*) Don and Danube. London and Paris.
(*f*). (1) Volga, Danube, (2) London, Paris.

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4. Bound the Empire of Germany, and name its three chief cities.

(*a.*) Germany is bounded on the north by Denmark, on the east by Prussia, and Austria, and on the south by Switzerland, and on the west by France, Belgium, Holland, and western Prussia. Frankfort, Haarlem, Mentz, are three of the principal cities.
(*b.*) (1.) Bounded on the North by Categat Chanel, on the East by Russia, on the South by Prussia Switzerland and France on the East by France and North Sea,
(2.) Vienna, Frankfort Geneva.
(*c*) Bounded on the North by South by Switzerland W. France, E. Russia. Frankfort, Bremen & Lubec.
(*d*) Germany is bounded on the north by Denmark & the Baltic Sea, on the north and southeast by Russia and Austria, on the south by Switzerland, on the south and north-west by France & Holland.
Its chief cities are Bremen, Hamburg, Frankfort & Stuttgart.
(*e*) On the north by Denmark and the Baltic Sea. On the east by Russia. On the south by Austria and Switzerland and on the west by France, Belgium, Holland and North Sea. Berlin, Hanover, Hamburg, Breslau and Leipsic.
(*f*) On the north by Denmark & The Baltic. on the East by Rusia & Austria. S. by Austria and Switzerlang. W. by France, Belgium & Holland. (2.) Berlin, Hamburg, & Breslau.

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5. What is the chief seaport of China? Russia? British India? Austria?

(*a*) The chief seaport of China is, Hong Kong. Of Russia, St. Petersburg. Of British India, Calcutta Of Austria, ——.
(*b*) (*a*) Shanghai, (*b*) Odessa (*c*) Bombay.
(*c*) Canton, Archangel, Singapore.
(*d*) Seaport in *China Pekin*, *Russia St-Petersburg* India Calcutta, Austria Vienna.
(*e*). (1). Pekin, (2) St. Petersburg. (3) Calcutta (4). Has None.
(*f*). (1) Canton, (2) St. Petersburg, (3) Calcutta (4) Trieste.

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6. What are the chief exports and imports of the United States?

(*a.*) The chief exports of the United States are, cotton, rice, tobacco, wheat, and lumber. The imports are, cotton, woolen and silk goods, and various kinds of machines.
(*b.*) (1.) Gold, grain, wool, cotton tobacco.
(2.) Tea, coffee, dyewoods mahogany.
(*c*). (a). Leather, grain, cotton, tobacco. b. Tea, rice, sugar, indigo, coffee.

(*d*) Gold, cotton and grain are the exports; furs, laces, velvets, carpets, tea, rice etc. are the imports.
(*e*) Wheat, Cotton, Tobacco, Sugar and Molasses, Rice, Corn &c &c
Silk goods, Tea, Linen and Chinamen.
(*f*). Wheat, Cotto, Wool, Gold, Timber &c.
Tea, Coffee, Sugar, Manufactured goods, Iron &c &c

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7. Name the characteristic animals of each of the zones.

(*a*) Of the torrid, the elephant, lion, tiger and camel. Of the temperate, the buffalo, black bear, deer and wolf. Of the frigid, the reindeer and white bear.
(*b*) Those of the Frigid Zone live chiefly upon meat, all being carniverous animals. Those of the Temperate are of a more docile character and live in trees or in cavès, or furroughs. They subsist on fruits meats and herbs. c Those of the Torrid Zone are generally more slothful, and larger and more ferocious when intruded upon.
(*c*) Torrid Z. Rhinoceros, elephant, Camel, hipopotamus, tiger.
Temperate Z. Horse, cow, dog, cat.
Frigid Z. White bear, reindeer, fox.
(*d*) The polar or white bear is found in the frigid zone; horse, cow & others well known to all are found in the temperate; camel elephalt & ostrich are found in the torrid.
(*e*) Frigid, Polar bear, Seal, Walrus, silver fox and Esquimaux
Temperate Horse, Cow, Sheep deer, bear, Buffalo &c &c.
Torrid. Lion Panther Ape gorilla leopard Rhinoceros elephant &c &c.
(*f*) (1) Of the Frigid, White or Polar Bear, Reindeer, seal &c. (2) Temperate, Horse, Ox, Buffalow, Bear, deer, wolf &c. (3) Torrid Lion, Elephant, Hippopotamus, Camel, Tiger Camellepard, &c.

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8. Name the principal animals and plants introduced into the New World from the Old World.

(*a*) The horse, cow, sheep, and hog. Most of the different kinds of fruits, and the finest flowering plants.
(*b*) (1) The horse the ox, the hog.
(2) The potato, cotton apple and peach.
(*c*) a Horse, cow, dog, mule. Cotton, wheat, flax, hemp.
(*d*) Cows & sheep, the potato plant.
(*e*) Horses, Cows Sheep, hogs.
Wheat, Rye Oats, Barley, peas &c &c
(*f*) (1) Horse, Ox, Sheep, Ass, &c.
(2) Wheat, Barley, Rice &c.

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9. What causes produce ocean-currents?

(*a*) Ocean-currents are caused by the heated waters of the equatorial

regions flowing towards the poles, and the cold waters of the polar regions rushing in to take their place.

(*b*) Ocean-currents are caused partly by the rotary motion of the earth and partly by the tropical heat at the equator, when the water becomes warm by the tropical heat it comes to the top and the cold water from the North and South come in and take its place thus producind a continual movement of the water.

(*c*) The motion of the earth and attraction of the earth by the moon.

(*d*) The rapid motion of the earth at the equator.

(*e*) Revolution of the earth on its axes, Temperature, Wind and tides and the action of the sun and moon.

(*f*) The rotary motion of the Earth Heat & the land that they meet which causes them to deflect.

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10. State the area, population and exports of California.

(*a*) The area of California is 566,000, square miles, the population over one million, and the exports are, gold and wheat.

(*b*) (a) 180,000 sq. miles. (b) 650,000 Pop (c) wheat gold, wool beef and pork.

(*c*) Area=189000. Wheat, Hides and gold dust.

(*d*) Area of Cal. 160000 sqare miles, pop. about 360000, exports gold, silver and grain.

(*e*) Area, 160,000 Sq. Miles.
Pop. over 560.000.
Exports, Wheat, wine, wool, gold and Quicksilver.

(*f*) (1) 160,000 Sq. miles. (2) estimated in 1870 at 625,000 (3) Wheat Wool, Gold, Silver, Wine Quicksilver &c.

HISTORY OF THE UNITED STATES.

Fifty credits; ten questions, five credits each.

1. Who were John Carver; John Endicott; John Winthrop; Peter Minnit; Father Hennipen?

(*a*) John Carver was chosen as the first govenor of the Pilgrims that came to America in the Mayflower.
John Endicott was the first govenor of the Mass. Bay Colony. John Winthrop was the successor of John Endicott.
Peter Minnit was the first ruler of the Dutch in the New Netherlands. Father Hennipen was the first explorer of the upper part of the Mississippi. He sailed down the Illinois river and up the Mississippi to Minnessota.

(*b.*) (*a.*) John Carver was first govenor of Mass. (*b.*) John Edincott, was one of early settlers in the colonies. John Winthrop was an early Gov. of Mass. Bay Col. Peter Minnit was also an early govener. Father Henipen was an early French explorer in the Mississippi Valley, and Ohio River.

(*c*) Jno. Carver was governor of Massachusetts. John Endicott was of much advantage to the people of Massachusetts. John Winthrop

was governor of Virginia. Peter Minnit governor of New York. Father Henipen was a Jessuit missionary and made explorations at the time La Salle made explorations.

(*d*) Father Hennipen a French priest & who lived or explored on the Mississippi during the French war.

(*e*) Jno. Carver was a Puritan governor of Plymouth colony in Massachusetts.

John Endicott was leader of a party of Puritans from England to Massachusetts.

John Winthrop was governor of Massachusetts Bay Colony.

Peter Minnit was the Dutch governor of New Netherlands.

Father Hennipen was a French priest who sailed down the Illenois river and up the Mississippi as far as the falls of St. Anthony.

(*f*) John Carver came over in the Mayflower, & was chosen the first Govenor (2) John Endicott was sent out by the Massachusetts Bay Co with 1500 men & succeeded John Winthrop as Govenor (3) John Winthrop was the second Govenor of the same colony (4). Peter Minnit was Governor of New York (5) Father Hennipen was a Catholic priest who descended the Ilinois river to the Missippi &c.

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2. Give an account of the conquest of Acadia.

(*a*) All the land from North Carolina to Nova Scotia was discovered by Verrazzinni in 1524 and was called by him Acadia or New France. It was afterwards claimed by the Dutch and was finally conquored by the English; and at the time of the Revolution formed most of the colonies.

(*b*) Acadia was a settlement on the Gulf of St Lawrence and during the French and Indian War the colonies sailed to that point with a strong force and devastated the homes of the people and took many of them on board prison ships to remain until after the close of the war.

(*c*) The conquest of Acadia was at Port Royal, Nova Scotia in 1710, during Queen Anne's war.

(*d*) Not answered.

(*e*) It was conquered by a party from Massachusetts Rhode Island and New Hampshire, in the year 1710

(*f*) During Queen Ann's war the people of Massachusetts Connecticut Rhode Island united and raised an army and took Port Royal in what was Acadia; but by a treaty between France and England it was given back to the French. It was again taken by the colonies & has remained a British province ever since

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3. Conditions of the first Treaty of Paris.

(*a*) The final treaty of the Colonies with England was called the Treaty of Paris. In it the Colonies under the name of the United States was acknowledged as a separate and indipendent government.

(*b*) By the first Treaty of Paris the French ceded all the land east of the Miss river except the city and Island of Orleans.

(c) Congress may provide for the common defense, levy taxes, grant patents to authors, or inventors, establish a Mint, raise armies in case of declared insurrection.

The United States shall not grant a patent of nobility, issue any letters of marque or reprisal, or establish any rules for primo-geniture.

(d) 1. To borrow money on the United States
2. To establish post-offices and post-roads
3. To provide a navy.
4. To call forth the militia, punish felonies comitted at sea & suppress insurrections.
5. To coin money & fix the standard of weights & measures.
1. The writ of habeas corpus cannot be suspended except in case of rebellion.
2. No duty can be laid on articles exported from any state.
3. No title of nobility can be granted, & no one who holds an office of profit can without the consent of Congress accept an office from a foreign state.

(e) 1. To Levy taxes, impose duties &c. &c.
2. To make laws, regulate commerce &c
3. To declare war.
4. To call out men and drill them as soldiers &c.
5. To make treaties with nations and arrange the preliminaries &c.
6. To impeach and try the President of the United States
1. The United States has no power to prevent a state from receiving immigrants
2. Has no power to withhold a Writ of Habeas Corpus when the safety of any deem it necessary.
3. To pass any bill of attainder or make any ex-post facto laws

(f) 1. Power to reglate commerce;
2. to declare war.
3. to coin money.
4. to borrow money on the credit of the government.
5. to raise and maintain a navy.

Powers denied

1. to pass an expost facto law;
2. no title of nobility shall be granted
3. no tax on exports shall be levied

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9. Give at least five facts indicative of the progress of the United States since her independence.

(*a*) The lightning rod by Franklin, the cotton gin, the magnetic telegraph, by Morse, the *Atlantic Cabal*, the steamboat, and railroad.

(*b*) The imigration from foreign countries, the numerous large cities, the interest taken in agriculture an commerce also the Rail Roads and Telegraph wires that thread our land, and the vast number of inventions issued yearly.

(*c*) The application made of electricity with refference to the telegraph or the invention of the same. The invention of the steam-boat, the laying of the sub-marine telegraph, the laying of the Central Pacific Rail Road track, and the vast immigration of peope.

(*d*) General welfare, intellectual & moral progress, progress in the fine arts, growth of population, liberty and justice.
(*e*) Area, Population, Wealth, Education, Commerce and Manufacture.
(*f*) 1. The great increase in welth & popolation.
2. the number & extent of railroads
3. the proficiency of her people in the arts and sciences;
4. the esteem in which she is held by other nations
5. the utility of her public schools.

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10. What caused the present National Debt? How has it been diminished? Can you give any estimate of its amount at the close of the war?

(A) The present National Debt was caused by the war of the Rebellion. It has been diminished many millions of dollars by means of a system of revanue; a duty being placed on all home-manufactures, as well as on all imports. The amount at the close of the was about 2,700,000.

(B) (*a*) The present National Debt was caused and acrued from the expense of carying on the late Civil War in the U. S. A.
(*b*) It has been diminished by laying tariff on different imported articles also by Postage on articles manufactured in the U. S. A. and lastly by the Postal Card Act.
(*c*) The amount of National Debt at the close of the War was $2,700,000,000.

(C) The National debt was caused by the expenses incured by the war of Secession; money had to be raised for the maintenance of the army and to care for the wants of the wounded. It has been diminished by taxes by issuing governnment bonds or in other words by the credit of the United States.
Over a billion and a half.

(D) The war of 1860, by imposing duties and taxation, some millions.

(E) (*a*) The war between the North and South Subject the "*nigger.*"
(*b*) By taxation and revenue.
(*c*) About 300,000,000,000.

(F) (1) The war of the rebeion
(2) By the revanues collected by the government, and by the sale of Gold and the purchase of bonds.
(3) Something over ($3,000,000,000,) three billions of dollars.

The 1st kind of lever. The weight is at one end, the power at the other and the fulcrum between the two, but near the weight.

The 2nd kind. The fulcrum is at one end, the power at the other and the weight between the two, but nearer the fulcrum.

The third kind, The weight is at one end, the fulcrum at the other and the power between the two.

(*f*) (1) A lever is an inelastic rod or bar resting on a fulcrum. (3) Three (4) First where the weight is between the power and fulcrum. (2) Where the fulcrum is between the power and weight (3) Where the power is between the weight and fulcrum

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5. Describe the steam-boiler. The safety valve. The steam-gauge.

(*a*) The steam engine consists of a large cylinder, containing the water, which is heated from a fire directly underneath. The water becoming heated forms steam, and this expanding with great force escapes by means of a valve into a smaller cylinder, where it communicates its force to a piston or rod connected with the driving wheels. Steam engines are either high or low pressure. The safety valve is to let the steam escape if there is too great a supply. The steam gauge is to regulate the amount of steam; it rises or falls as the pressure of the steam is greater or less.

(*b*) The steam-boiler is a large hollow cylinder inside of which is a grate for fire. As the water becomes heated steam generates and ascend to the steam chest above.

(2) The *safety valve* is an *institution* on the top of the steam chest which permits the steam to escape whenever a cercain amount generates.

(3) The *Steam guage* is an instrument placed near the top of the *safety valve* which makes the wight of the steam in the steam chest.

(*c*) The steam boiler is composed of heavy plates of iron welded, and arranged in order to give the greatest possible strength.

The safety valve is so arranged as to allow the steam to escape when their is too great a supply.

The steam guage is composed of arms to which balls are attached are raised and depress opening or closing valves according as the supply of steam is to much or too little.

(*d*) No philosophy.

(*e*) It is a hollow cylinder of iron, so arranged as to give it great strength. It is used to generate steam. It has guages and valves attached to it. One or more of its valves are called safety valves; they are for the purpose of allowing the steam (after it rises to a certain height) to escape; and thus prevent explosion.

The steam guage, is an instrument, shaped very much like a clock; having a face and hand to it. Its use is to show the pressure of steam in the boiler.

(*f*) A boiler is made of thick wrought iron or copper plates strongly riveted together so as to resist the expansive force of the steam generated within. They are generally cillindrical. (2) The safty valve is a valve fixed on the upper portion of the boiler, which is forced open and allows a certain portion to escape whenever the pressure exceeds a certain amount; a lever with a weight is attached to the valve so as to measure the amount of presure which the steam has. (3) A steam

guage is a dial like the face of a clocc & a hand which toward the figures and it is connected with the steam chest it indicates the amount of presure which the steam has.

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6. How do fluids differ from solids? Difference between liquids and gases!

(*a*) The particles of solids cohere, of fluids do not. Solids gravitate in a mass, fluids each particle separately. The particles of gasses have a greater repulsion for each other than those of fluids.

(*b*) Fluids differ from solids by being more easily penetrated and the particles cohere less strongly.

Gases cohere still more lightly than liquids, and the particles cohere more slightly.

(*c*) Fuids the particles cohere slightly and do not retain form. In solids the particles of the body cohere very closely and have a definite form

In liquids the particls less closely than in solids, and move freely one upon an-other, while in gasses they cohere less than in liquids and have a tendency to be diffused into space.

(*d*) No philosophy.

(*e*) Fluids may be poured out, and they will find their level. Solids cannot be poured out, neither will they find their level, while in that state. Liquids have weight, and can be confined in an open vessel. Gases have no weight, or at least their weight is so small that it requires a great deal of trouble to ascertain it. gases will also escape if confined in an open *vessel.*

(*f*) Their particles move freely amond eachother, while solids remain firm (.2) Gasses are more expansive

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7. How are bodies affected by heat? What classes of bodies are most susceptible of this action?

(*a*). First, heat causes bodies to expand; secondly, it converts solids to a fluid form; thirdly, it destroys their texture by combustion. Gasses and fluids are more susceptible to the action of heat than bodies.

(*b*) Bodies are expanded by heat. Aeriform bodies, and liquids are more susceptible to expansion than others.

(*c*) Bodies acted upon by heat are, expanded, liquified, vaporised, or are subjected to incanidescence.

Solids, and liquids.

(*d*) No philosophy.

(*e*) Heat expands bodies, It also changes certain solids and then into gasses.

Liquids are more susceptible of heat than solids.

And gasses are very easily rarified by heat.

(*f*) They are expanded. (2) Fluids.

8. What is necessary to the transmission of sound? On what does the greater conducting power of the air depend?

(*a*). Air. It depends on its density.
(*b*) (1) Air is necessary to the transmission of sound.
(2) It depend upon the purness of the air.
(*c*) That the air should be dry. The greater conducting power of the air depends on its freeness from foreign substances.
(*d*) No philosophy.
(*e*) The more dense air is the greater is its conducting power; while the rarer it is, the less its conducting power is.
(*f*) (1) the presenc of a sonorous substance
(2) its density.

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9. Give a description of an electrical battery. How is it discharged?

(*a*). The electric battery is composed of a number of Leyden jars connected together. There is a metalic bar or knob connected with the battery, and by forming a connection between this knob and the earth by a chain or some other conducting substance, the battery will be discharged; the electricity passing off into the earth.
(*b*). The electrical battery is composed of a combination of fine steel wheels, and placed in a box near a loadstone.
It is discharged by causing the loadstone to come in contact with the steel wheels.
(*c*) The electric battery is arranged first a layer of zinc then an acid then a layer of coper, then zinc, then acid, then coper, and so on, but their must be different metal at each end, wires are attached, and when it is required discharge the battery the wires are connected.
The electrical machine consists of glass cilinder and rubber one placed in contact on either side are a positive and negative insulator. The whole is supported by two beams; below these cilinders is a platform by which the ruber can be pressed nearer the glass. The machine is worked by a crank. It is discharged by working the crank, and by bringing the ruber and glass in contact electricity is generated. The positive electricity goes to the negative insulator and the negative to the positive insulator and thus causes a discharge. The plate machine plates are used instead of cilinders and in the beams in contact with the plate ruber is placed. It is discharged and electricity is generated in the same manner as the former.
(*d*) No philosophy.
(*e*) It is a brass plate to which a crank is attached. It passes between rough surfaces on either side. It is discharged by means of keys attached to wires as in telegraphy, and in other ways as required.
(*f*) It consists of a number of Leyden jars, coated inside and out with tin foil to within a few inches of the top into these jars are placed wires which terminate in brass knobs which are all connected.
(2) By ringing one of these knobs in connection with a prime conductor.

10. Where in a bar magnet does the power chiefly reside? How are the extremities of a magnet distinguished?

(*a*) The power of a magnet is chiefly in the ends of the magnet the center having very little power. One extremity is called the north and the other the south pole.

(*b*) (1) The power chiefly exists in the ponted end.
(2) By their size and shape.

(*c*) In the ends of the magnet. The extremities of a magnet are distinguished as the north and south pole.

(*d*) No philosophy.

(*e*) At the extremities.
As *Positive* and *Negative.*

(*f*) (1) In its points. (2) By placing them in contact with some mineral substance

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NATURAL HISTORY.

Fifty credits; ten questions, five credits each.

1. Give the principal characteristics of the ruminants.

(*a*) The principal characteristics of the ruminants are their size and hoofs.

(*b*) Ruminants include all those four-footed animals which chew a cud.

(*c*) Ruminants chew the cud, and live on herbs, and grasses, and have a thick skin.

(*d*) Ruminants chew their cud.

(*e*) They are all cloven foot except the camel and Llama

(*f*) They part the hoof, they chew the cud, they feed on grasses they have the lateral motion of the jaw &c

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2. Give the different kinds of dentition.

(*a*). There are three principal kinds of dentition; those of the carnivorous or flesh eating animals that are very sharp; those of the ruminants or grass eating animals that are very rounded, and thirdly, those that have both kinds of food, and both sharp and rounded teeth.

(*b*) The kinds of dentition differ in the different animals. Those of the carnivorous class are pointed or tearing teeth.

Those of the Ruminants are more smooth and regular. Those of the human family are both cutting and grinding teeth

(*c*) Animals that live on flesh have molars mostly or grinding teeth. Those that live on grasses have incisors mostly, or cutting teeth. While those live on flesh and herbs have both incisors and molars.

(*d*) There are sharp edged dentals, which beasts of prey have, flat edged, which herbivorous animals use for grinding.

(*e*) Permanent or lasting and desiduous or those that fall out

(*f*) The molars, the incissors, and the canines.

3. How do the claws of a dog differ from those of a cat?

(*a*) The claws of a cat are much sharper than those of a dog.
(*b*) The claws of the dog differ from those of the cat by only having four toes on the forefeet while the cat has five.
(*c*) The claws of a cat are retractile, while those of a dog are not.
(*d*) The claws of a dog have short nails & have not the power of contracting them, those of a cat have long nails, which can be drawn in and which assist them in climbing.
(*e*) The claws of a dog are just slightly curved, while those of a cat are so arranged as to hold on to anything it might chance to seize. The claws of the cat are very similar to those of a hawk and eagle.
(*f*) The dogs are not as sharp & do not have the cushion which the cat has to protect them; then the dog has on thum like claw which the cat does not have

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4. Describe briefly the process of "chewing the cud."

(*a*) The food is first swallowed without being chewed, and after being mixed with the gasses of the stomach is returned to the mouth and chewed.
(*b*) The "cud" is taken into the stomach by the animal in a loose state, from whence it goes into the *second* where it is separated into little pallets, and when the animal stops eating to rest the "curd" ascends to the mouth and is remasticated.
(*c*) The food is taken in the mouth and thence it passes to the first stomac. Afterwards it is brought into the mouth, when it is masticated, and passes into the stomac.
(*d*) Animals that chew the cud have two stomachs, the first is used merely as a receptacle for the food, it is brought from this receptacle back to the mouth, where it is again masticated much finer than the first time, it then descends to the second stomach where it is digested.
(*e*) When the food is taken into the mouth it is slightly chewed. It then passes into the 1st stomach, then into the second stomach. It then returns in the form of pellets to the mouth. It then undergoes a second operation of chewing; after which it passes into the third stomach, then into the fourth after which it is past off.
(*f*) First the food is passed into the pouch or first stomach and is moistened from thence it is passed into the second stomach & is converted into small balls, from thence it is returned to the mouth & chewed fine & is passed into the third stomach, from thence into the fourth.

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5. How do the bones of birds differ from the bones of mammalia?

(*a*) The bones of birds are hollow, those of mammals are solid.
(*b*) The bones of birds differ from those of *Mammalia* by being hollow and filled with air.
(*c*) The bones of birds are light and are not formed for strength as much as beauty. The bones of mamalia are formed for strength as they have so much more weight to support. Birds travel by means of wings, and therefore do not require as strong bones.

(*d*) The bones of birds are filled with air those of mammalia with marrow, or are solid.

(*e*) The bones of birds are very slender, so as to insure swiftness in flight, being very light. While the bones of the mammalia are so constructed as to give them strength, and solidity.

(*f*) They are hollow and are more cartalagenous.

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6. Name the parts of a grass-leaf.

(*a*) The parts of a grass-leaf are, the blade, base, apex, margin, and veins.

(*b*) (1) The flattened upper part of the leaf is called the *Blade*
(2) The leaf stalk surrounding the stem is called the *Sheath.*
(3) The scale stipule of-ten seen between sheath and blad is called the *Ligule*

(*c*) Blade, sheath, scales, ligules.

(*d*) Sheath, ligule & stem.

(*e*) The parts of a grass leaf are
1st The Midrib
2nd " blade
3d " Parallel veins.

(*f*) Stem, ribs, veins & veinlets.

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7. Give the difference between feather-veined and palmate-veined leaves.

(*a*) The feather veined leaves, have a midrib or central vein which is a continuation of the petiole, with little veins branching off from its sides. The palmate-veined leaves, have the petiole divided into five principal veins, at the base of the leaf, and one running to each of the five divisions of a palmate-leaf.

(*b*) Feather-veined leaves have a rib the midrib—which gives off veins right and left

A palmate-veined leaf has several ribs passing across the blad in a spreading fassion

(*c*) The feather-veined leaf has one large rib or vein and numerous veinlets branching from this, so that it has the appearance of a feather. The palmate-veined leaf has several of the large mid-ribs or veins with smaller veins branching from it; so as that the veins are arranged similar to the fingers on our hand.

(*d*) A leaf with one rib is feather-veined, a leaf with more than one is palmate-veined.

(*e*) The difference of a palamate vein and a feather veined leaf is this: The feather veined leaf has a midrif with veins communicating with it. The midrif is a continuation of the petiole. In Palmate vein leaves there is no midrif; but what might be called ribs branching out from the petiole, with which the veins communicate.

(*f*) Feather-veined have more than one rib; palmate-veined only one

8. Give the principal kinds of inflorescence.

(*a*). The principal kinds of inflorescence are the terminal and axilary.
(*b*) The principal kinds of Inflorescence are the Spike Sadix, Catkin, Raceme Corymb Umbel, and the compounds of the Umbel Raceme and Corymb.
(*c*) It is either solitary or compound inflorescence.
(*d*) Solitary & clustered.
(*e*). 1st Terminal & 2nd axillary It is also divided into Definite & Indefinite.
(*f*) Determinate & indeterminate.

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9. Give the parts of the seed.

(*a*) The parts of the seed are the germ, kernel, and outer covering or shell.
(*b*) The *Seed coat* or Integument is the skin that surrounds the outside of the seed.
The *Kernel* is the substance within the seed coat.
(1) *Embryo*, The young plant contained within the seed.
(2) The Albumen, The material in which the embryo is embeded.
(*c*) Coteledous, integuanent, germ.
(*d*) The embryo, carpels & capsuels.
(*e*) 1st The Seed coat.
2d The germ
3rd Sometimes albuminous matter enclosing the seed germ.
(*f*) Seed coats, nucle-us, albumen & germ.

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10. How can you distinguish exogenous and endogenous plants in the seed already?

(*a*) The exogenous are those that open of themselves, the endogenous those that are closed.
(*b*) We can tell if we separate the seed and examine the Embryo; but I do not understand how we can tell if we examine only the outside of the seed.
(*c*) Exogenous plants have two coteledons and endogenous plants have one coteledon.
(*d*) Not answered.
(*e*) In the endogenous the seed has only one cotyledon. In the exogenous generally two cotyledons, very seldom several in a whorl.
(*f*) Exogenous have more than one seed-leaf, endogenous but one.

THEORY AND PRACTICE OF TEACHING.

Fifty credits; ten questions, five credits each.

1. Give the outline of a short moral lesson on "Untruthfulness."

(*a*) It would be necessary to impress upon the mind that we are responsible beings and have right and wrong placed before us to choose whichever we will; then explain wherein untruthfulness is wrong, and illustrate by means of some story.

(*b*) The shame that accompanies an untruth is evident in the countenance of the child. For instance, the story of Washington an the hatchet I he told his father an untruth he would have been ashamed to come into the presence of his father for many days, but when he avowed to the act which had provoked his father he was received in his arms, so we can easily see the folly of uttering an untruth in even the most trivial instance.

(*c*) Children did you ever see a man in the States prison? If so what do you suppose brought him there? He very likely at first commenced by telling a falsehood about some little thing as a marble; next time he did not wait to claim the toy by means of a falsehood, but pocketed it deliberately without argument, one way or another. After the first downward step the others are easily passed, each successive time concience is not so sharp. Finally we become so hardened that large thefts, and falsehoods are matter of little moment. Then comes retribution. Discovery as a natural consequence. States Prison, and years of remorse. What a life a narrow prison, shut out from light, home and friends. Then reprieve; but what is liberty now. Friends, reputation gone. His thoughts naturally revert to the first cause of all this misery—his first untruth.

(*d*) An untruth is a disobedience against a command; it originates in fear & from a design to deceive & is invariably followed by penalty; it adds guilt to guilt. A moral lesson on it may be taken from the story of Washington and the cherry tree. In the degree that his truthfulness was commended, his untruthfulness would have been censured.

(*e*) (1) Define what you understand by *untruthfulness?*
(2) Is untruthfulness a *virtue* or is it a *vice?*
(3) Should we practice untruthfulness?
(4) Is an untruthful person respected?
(5) How ought we be guided?

(*f*) First should be shown the result of such a course & then by comparison show the reward of truthfulness and cite examples &c

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2. Mention two methods of developing the expressive faculties.

(*a*) The expressive faculties may be developed by frequent exercises in original composition, and by reading well written works.

(*b*) The expressive faculties may be developed by giving various exercises in Vocal culture, also by singing pieces in Music which tend to please the singers.

(*c*) Drawing a scholar on from one step to another by means of objects in nature, requiring them to point out points of resemblance between one object and another. Also develop by means of short sentences formed by holding up an object, and requiring a pupil to mention some quality of it, then on others until something is said about it.

(*d*) Observation and language.

(*e*) 1st By constant attention so that we understand expression and 2nd By constant practice in the art.
(*f*) (1) one method is to criticis & correct faults, (2) by placing a moddle before them for them to imitate.

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3. What use would you make of a Reading Book in teaching Grammar?

(*a*) Should use it frequently for exercises in parsing, as it is necessary to become familliar with every method of arranging thoughts, whether in prose or poetry.
(*b*) I should use a Reading Book in teaching Grammar, because in it we find narratives just as they as spoken, by the Narrator, and the learner will more readily comprehend it than in broken sentences.
(*c*) I would use a Reading Book to have the pupils name parts of speech from the Reader.
(*d*) By asking questions relative to grammar, for instance the subjects & objects of the action, by pointing out the nouns, pronouns verbs etc; in fact mainly by making scholars comprehend what they read.
(*e*) I would use it to teach Orthography and Orthoepy. Also in the inflections of nouns pronouns &c and whenever I could possibly bring it into use I would do so.
(*f*) To show the use of the marks & pausses & to use as a book to analyz & parse &c.

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4. Name some of the errors to be avoided in conducting recitations.

(*a*) Allowing the class to lose interest, through lack of thorough explanations; talking in the class; and also improper positions in sitting or standing. It would be better not to pursue the regular routine of asking questions, but pass around the class promiscuously.
(*b*) Some of the errors in conducting and exercise that should not be tolerated are permitting pupils to be slack in their attention while the teacher is trying to explain something to the class.
We should also avoid permitting a child to give an incomplete sentence while answering a question but require a full sentence.
(*c*) A recitation should not be conducted until all are attentive. The drawing out process should be avoided, that is giving a pupil an idea of the answer, as in asking this question, Does the Mississippi river rise in the northern or southern part of the United States? In all such questions the idea of answer is conveyed. You should not commence at the same part of the class daily to hear recitation, but should alternately commence at different parts of the class to conduct a recitation. Concert recitations should not be too frequently used as a scholar learns in this way to depend too much on others. You should never go before your class without special preperation.
(*d*) Confining scholars to the *exact* words of the book is an error, also allowing them to pass on without questions or explanation.
(*e*) Indistinctness in speech. A confused mass of words having no sense, used in explanation, or in asking a question. Inattention of a class. Noisy schools, &c &c

(*f*) First allowing schollars to talk in a very low tone, (2) allowing them to recite in rotation so that they can number their questions & only larn one or two questions &c.

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5. Explain what is meant by the agreement of noun and verb.

(*a*) A verb must agree with its subject in number and person; therefore if the noun is singular the verb must be singular, or if the noun is plural the verb must be plural also.

(*b*) By the term agreement of a noun and a verb is meant that the verb has the same person number and gender as its subject as a verb has neither of this when standing alone.

(*c*) A verb is said to agree with a noun when its person and number are the same as its noun. In the sentence— boys read: boys is third person singular number, and requires a verb in the third person, singular number.

(*d*) A noun and a verb agree when they are of the same person & number.

(*e*) That one is in the same number and person, as the other.

(*f*) The verb must agree with its subject in person an number That is it must change its form when nessary to suit it nominative

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6. Explain to a class the course of the Trade Winds.

(*a*) The vertical rays of the sun at the equator cause the air to become heated and it rises; the cold winds from the poles rush in to fill the vacancy, and they would blow, directly north and south were it not for the motion of the earth which turns them in a different direction and causes them to blow directly around the earth.

(*b*) The course of the Trade Winds in the Northern Hemisphere is from North East to South West and in the Southern Hemisphere from South West to North East.

(*c*) The trade winds east and west and west and east from the equator.

(*d*) The trade winds blow from the north-east & south-east & meet near the equator, there neutralize each other & cause calms, they then rise to a greater elevation and move towards the poles as the upper currents; when they become cool they descend & blow from south-west north & from north-west south.

(*e*) They have their origin in the Indian Ocean and take an easterly and westerly direction forming two currents.

(*f*) The Trade winds are air in motion caused by the heat of the tropics if the Earth were not in motion on its axes, the winds would always blow toward the Equator but as the earth revolve on its axis very rapidly especialy at the equator where it moves with greater rapidity the air falls behind the more solid portions of matter and exist as easterly winds only when stopped by land &c &c

7. Give an analysis of the operation of dividing 10 by $\frac{2}{3}$.

(*a*) In dividing by a fraction invert the divisor, and proceed as in multiplying. The rule for multiplying is "multiply the numerators together for a new numerator, and your denominators for a new denominator. Therefore, $10 \div \frac{2}{3} = 10 \times \frac{3}{2} = \frac{30}{2} = 15$ ans.

(*b*) 10 divided by $\frac{2}{3}$ is the same as 10 multiplied by $\frac{3}{2}$ therefor

$10 \times \frac{3}{2}$ is equal to 15

$\frac{1}{2}$ of ten is $\frac{5}{1}$ and $\frac{5}{1}$ multiplied by $\frac{3}{1} = \frac{15}{1}$ or 15. Ans.

(*c*) I first divide 10 by two, but it was not required to divide 10 by 2 but by $\frac{2}{3}$. My result is therefore to small by the denominator. To correct this dificiency I multiply the quotient obtained by dividing by 2 by 3. which is what was required.

(*d*) Omitted.

(*e*) 10 divided by $\frac{2}{3}$; or in other words, we wish to know how many $\frac{2}{3}$ there are in 10. In 1 there are $\frac{3}{3}$, therefore in 10, there are 30 one-thirds. If there are 30 one-thirds, there will be only one half as many two thirds, and the half of 30 is 15. Therefore there are 15 two-thirds in 10.

(*f*) Dividing by a fraction is equal to multiplying by its reciprocal, the reciprocal of 3 is $\frac{1}{3}$ $10 \times 3 = 30 \div 2 = 15$

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8. Name an important rule of spelling.

(*a*) Words ending in final *e* preceded by a consonant following a vowel, drop the *e* on taking an additional syllable; as, have, having; beleive, beleiving.

(*b*). All derivative word ending in *full* drop *one l*.

Or a primative word ending in a single consonant preceded by a single vowel doubles the final consonant before an aditional syllable commencing with a vowel.

(*c*). When a syllable is added commencing with a vowel to a word ending with a vowel the final vowel must be dropped.

(*d*). *Y* changes into *i* when preceded by a consonant & followed by a vowel, as duty duties, beauty beauties.

(*e*) Divide the word according to its constituent parts that is its *Prefix Root* and Suffix.

(*f*) A mono-sylable or a word accented on the last sylable, ending in a single consonent preced by a single vowel doubles the final consonant on receiving an additional syllable beginning with a vowel.

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9. What is your plan of keeping pupils at work while in school?

(*a*) Give short lessons and require them to be thoroughly committed; at the same time allow no communication during school hours.

(*b*) My plan is to make some change in the studies of those who seem to be uninterested take something that will excite their attention such as a drawing lesson as a lesson in Calisthenics, cause all to put book aside while I illustrate some experiment in Philosophy or relate some narative.

(*c*) While hearing a recitation, the other pupils are required to use

their slates either to write, print, or cipher. When wearied, give all short exercise as recreation. Then as a change require all to study books simply, unless it is a primary grade when black board can be advantageously used for printing or drawing as recreation.

(*d*) Vary their occupation and let it not be beyond their capacity.

(*e*) Giving them plenty to do and making them do it.

(*f*) Give them plenty work to do & impressing upon their minds the importance of a thorough education & by useing all propper stimulant, & then whatching them to see that none prove recreant, &c.

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10. What is the proper use of *memory* in the process of instruction?

(*a*) Study events and dates, connectedly, and it will improve the memory; while on the other hand if the mind is crowded with a miscellaneous assortment of knowledge it will be useless.

(*b*) Without memory we could give no instruction for we could accumulate none to give. But the most important is to be able to give many interesting illustrations not in the text books and lead the pupils to believe that there is much not contained in the books they use, and also to give correct advice on any subject.

(*c*) The pupil should only be required to remember things that are important the minutia or unimportant events simply confuse and tend to make us forget or remember imperfectly the more important. Memory is secondary to awakening of the faculties. When that is accomplished memory will do its work.

(*d*) Memory gives us readiness, makes our knowledge practical.

(*e*) To retain a subject so that it can have proper mental consideration.

(*f*) To retain what has been larned

COMPOSITION.

Twenty-five credits.

(One credit off for each mistake in spelling, in punctuation, or in the use of capitals.)

1. What I have read.
2. Chinese Immigration.
3. Horticulture.
4. Physical Training of Children.
5. Out-of-door Life.

Write a composition on any one of the above subjects.

(*a*) CHINESE IMMIGRATION.

There can be no doubt but that it is a great disadvantage to all classes of people.

First by rendering physical labor so cheap, it deprives many of our own poor, of the employment by which, alone, they subsist; making them, either work at such prices that they have to starve both body and mind, or quit work and live by some dishonest means; thus, filling the country with a bad class of people, instead of having our poor respectable and honest.

By putting it within the power of the higher classes, to avoid manual labor entirely, they are made effeminate and weakly, both in body and mind. For, the body is made strong only in proportion as it is exercised, and the improvement of the mind depends on the body; if the body be strong and active so also will the mind be; or, if the body be weak the mind will correspond.

Thirdly, if we as a nation have any hope of ever converting the Chinese to Christianity, it will be far better to send missionaries to them, than to allow them to come here; for when they do, they see persons that profess to believe in the Christian religion, acting so different to their professions, that they become skeptics, and worse than ever they were before hearing of God.

Shall then a few speculators, for their own selfish purposes, fill the country with this class of people?

(*b*) OUT DOOR LIFE.

The benefit and comfort of OUT DOOR LIFE can only be appreciated by those who have indulged in its pleasures.

Its advantages, concerning the vitality of the human system, are made manifest when we look the upright frame, the robust form, the glowing cheeks, and smiling faces of those who inhabit the rural sections of our State; and who daily add vigor to the system, bloom to the cheek, and lustre to the eye as they indulge in delightful amusement wandering through the fields of waving grain, and blooming flowers inhaling the pure atmosphere, which is the true and leading life giving element of all animal life.

(*c*) OUT-OF DOOR LIFE.

One of the most pleasant lives a person can live is the life that is free and unconstrained; rambling among the woods and enjoying the beauties of nature.

Such a life one has a such wide field for observation and a wakening of thought that otherwise might never be presented to our minds. By rambling among the woods people acquired their knowledge of Botany, and Natural History. When we think of the perserverance it required to classify the vast number of flowers and shrubs with which our earth is covered we cannot but respect those who labored for the universal good of mankind. Though the study of plants affords much pleasure, it also requires much thought, and labor.

It was by living in tents, and under trees that the ancients acquired their knowledge of the stars, and arranged them in constellations according to their fancied resemblance to some object in nature or from some imagery of the brain. In fact a large portion of science has been

obtained from the study of nature; then who will not be willing to pass, at least a portion of their lives, in contributing their mite to the store of knowledge already acquired by living among the flowers, and trees.

(*d*) OUT-OF-DOOR LIFE.

Who does not admit the enjoyment as well as the necessity of passing a portion of our time out of doors?

Let us for a few moments consider how beneficially out-of-door life affects our physical as well as mental abilities.

Our lungs are supplied by the air we inhale, if it be impure (which in the house it generally is) our blood will certainly partake of those impurities & vice versa.

Free exercise out of doors contributes largely to the development of our bodies, & if the body be retarded in its growth the mind will also be dwarfed.

What child or even adult, who after a few rainy days' our hours' confinement does not greet with hearty cheers the open doors and returning sunshine. How weary we grow of in-door life!

Out of doors we have a large field for our observation.

Nature lays open her books for our perusal, every stone has a story & every creek a song.

We are led to believe that in ancient times people lived almost exclusively out-of-doors, it's very true they are spoken of as having tents, yet these are mere shadows of shelter.

In Switzerland and also in Arabia there are nomandic tribes, who never seek any other roof than Heaven's canoply.

I should like to dwell longer on the subject, but time will not permit.

(*e*) WHAT I HAVE READ

What have I read? Well! I have read a great deal; but have not retained much in my mind. I have read Histories of Greece, Rome, England, Scotland, Ireland, Canada and the United States. Also the poetical works of Byron, Moore, Burns, Tennyson, Milton, Virgil, Homer, Horace and selections from a great many others. Under the head of novels I have read the "Waverly"; Dickens, and a host of minor ones too numerous to mention.

In reading we should endeavor to select those works that will tend to improve the mind. When we read a chapter, we should thoroughly dijest it; that is, we should give it thorough consideration, grasping and retaining anything that will tend to advancement.

(*f*) HORTICULTURE

Horticulture is a subject which I know but little about; but it is a subject which should engege the attention of every land owner of this state; especialy of those in this portion of the state.

The soil is so rich, & all species of fruit trees yield such an abundance of fruit, that their cultivation will pay a rich return for the money invested. Then as an ornament, trees are to be greatly valued. I think that many of the tropical trees will do well in this valley, and grape vines above all other trees or vines will pay the best. The best way to start them is to put the cuttings where you want them to stay, and then keep the ground well watered and cultivated.

PHYSIOLOGY.

Ten questions, five credits each.

1. What is the office of the central organs of the nervous system in sensation and motion?

(*a*) They receive all sensations communicated to them from external objects and transmit them to the brain. They also receive the commands of the brain and send them to every portion of the system and thus produce motion.

(*b*) The central organs of the nervous system are the brain and spinal chord. The office of the brain is to direct every movement of the body, The spinal chord and its branches conducts every emotion to the brain.

(*c*) The office of the central organs of respiration is to transmit the sensation to the brain.

(*d*) They communicate or convey impressions.

(*e*) To communicate with the cranial and spinal nerves, and to all parts of the body.

(*f*) In sensation to take cognisance of anything that affects the senses, & in motion to send messages by the motor nerves to the muscels causing them to contract or expand as the case requires.

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2. What cavities does the mucous tissue line? How is the secretion of the mucous effected? Its use?

(*a*) The mucous tissue lines those cavities that communicate with the air. The secretion of the mucus is affected upon its own surface. Its use is to keep its surface moist, so that the different parts may not adhere.

(*b*) (1) The mucus tissue lines the throat, stomach, duodenum, and Intestines.

(2) The secretion of the mucus is effected by action of the Lacteals and Lymphatics.

(3) Its use is to aid in digestion and also to facilitate the movement of the food.

(*c*) The mucous tissue lines all those cavities that communicate with the air. The mucous is secreted by small glands in the mucous membrane. Its use is to lubricate the parts.

(*d*) The cavities of the nose & the ear, by the means of small glands or vesicles, as these parts are exposed to the air it lubricates them & prevents dryness.

(*e*). (1) The cavities of the stomach.

(2) It is affected by means of glands.

(*f*). (1) All cavities that have an opening that admits air, such as the stomach, mouth intestines, lungs, &c.

(2) by smal glands situated in the mucous membrane. (3) its use is to protect the membrane & in some instances to aid in converting the cyme into chyle.

3. Where are the bile and the fluid secreted by the pancreas mingled with the chyme? What is one of the offices they execute?

(*a*) They mingle with the chyme before reaching the Thoracic duct, and aid in separating and forming that portion that is sent to the heart to form blood.

(*b*) (1) The bile and Pancreatic juic mingle with the chyme in the Duodenum.

(2) One of the offices they execute is to secrete the waste and bilious particles which would otherwise create disease of the system.

(*c*) The bile and pancreas are mingled with the chyme in the duedenum. They convert the food chyle.

(*d*) In the intestines, they aid digestion.

(*e*) (1) In the Duodenum.

(2) To change the chyme into two parts; viz: chyle and resíduum or waste matter.

(*f*) (1) In the Duodenem (2) they help to convert cyme into chyle.

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4. How do the four parts of the heart act without disturbance? Illustrate.

(*a*) The heart is so formed that each part is distinct from all the others, so that the action of both the ventricles and auricles is free from all disturbance of the others.

(*b*) The four parts of the heart act without disturbance, by the fact that the septum divides it into two parts, and the two auricles both contract at the same time the *right* forcing the blood to the right ventricle and the left forcing the blood to the left ventricle; also the ventricles go through a similar process, the right forcing the blood through the Pulmonary Veins to the lungs while the left forces the blood through the *Aorta* to all the parts of the system.

(*c*) The four parts of the heart alternately contract, and expand. The blood passes from the right auricle to the right ventricle. The tricuspid valves prevent its reflux. From the right ventricle it passes pulmonary artery, The semi-lunar valves prevent its reflux. The pulmonary vein conveys the blood to the lungs, where it is purified. The pulmonary vein conveys the blood to the left auricle from there it passes to the left ventricle. The mitral valves prevent its reflux. From the left ventricle it passes to the aorta. The semilunar valves prevent its reflux. From the aorta it passes all over the system.

(*d*) When the ventricles collapse the auricles dilate, & when the ventricles dilate the auricles collapse.

(*e*) By means of valves and pulsation.

Place your thumb on your wrist and you can feel it. Pulsation is also discernable in several other places

(*f*) First the blood is recd into the right auricle, & and from thence it is forced into the right ventricle, & from thence into the pulmonary arery & to the lungs, from which it returns through the pulmonary veins into the left Auricle & is then forced by the contraction of its muscular coat into the left ventricle and in all cases the blood is pre-

vented from a refluc by valves; it is forced fron the left ventricle into the aorta & fron thence into all parts of the sistem

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5. In what two ways does violent exercise injure the lungs when the chest cannot be well expanded ?

(*a*) If the chest be compressed there will not be a sufficient quantity of fresh air admitted to the lungs to purify all the blood sent to it from the heart and it will consequently be filled too full, causing a great injury to its delicate structure.

(*b*) Violent exercise cause the blood to course more rapidly through the veins and therfore it takes a greater amount of air in the lungs to purify the excess of blood passing to the lungs to be purified: so if the chest cannot be expanded, some of the blood must return to the system in an impure state. Again there is much danger of bursting some of the blood vessels of the lungs if there is not sufficient air to counteract the blood.

(*c*) It violently explls the air which injures the minute cells of the organs of respiration, and also strains the chest, and abdominal muscles.

(*d*) The lungs are compressed, some of the air tubes are contracted & inflated more than others, consequently the lungs become diseased.

(*e*) It excites undue respiration and retards circulation.

(*f*) Violent exercise increases the action of the blood & thereby forces nore waste matter to the lungs & as the lungs by being contracted cannot admit air sufficient to carry it off it collects and causes its coat to become inactive, & also causes iritation

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6. Of what bones is the dome of the cranium made up? Describe the different ways in which strength is secured around the base of this dome.

(*a*) The cranium is made up of eight bones, arranged in two plates, and between them is placed a porous substance resembling bone, to soften the shock of any violent blow. The base is still further protected by being placed within the concave surface of the back of the head and invested with three membranes.

(*b*) (1) If the scientific names are required I cannot give them. It is composed of the convex bones which are joined by sutures at the top and sides of the head.

(2) Strength is secured first by the oval form of the cranium, and secondly by the texture of the skull, which is so arranged that a blow on the head will spend its force before it reaches the brain. Its oval form tends to make it stronger when any blow or weight comes in contact with it than when it is free from any such intrusion.

(*c*) Medulla oblongata, Cerebrum and Cerebelum. By its convex form thickness and fibrous and firm texture.

(*d*) Strength is secured by the thickness and projection of the base.

(*e*) The occupit and sincupit. By means of muscles, and also the sutures that unite them to the other bones of the head.

(*f*) (1) Frontal, 2 temporal, 2 parietal & occipetal. (2) First by the different cases which it, the outside bone being fibrous and tough then the spongy and last the hard which serves to prevent the penetrations of sharp instruments (2) Then the shape of skull, being convex also gives it protection

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7. Describe the arrangement of the radius and ulna, and the manner in which such free and varied motion is given to the arm.

(*a*) The radius is placed upon the outer and the ulna upon the inner side of the forearm; and being articulated with the humorous at the elbow form a perfect example of a hinge joint, giving to the arm its varied movements.

(*b*) The radius and ulna are so arranged that while one end is attached at the elbow the othe, of the same, is only attached at the wrist by ligament, to its parallel bone and not to the wrist bones. The other is attached to the wrist bones, at the joint and to its parallel bone at the elbow, this affords to them a rotary motion upon each other.

(*c*) The ulna is joined to the humerous by a socket and radius to the humerous by ligament; And at the wrist the radius is firmly attached and ulna attached by a ligament. Because these bones are left free at one end and made firm at the other alternately a great variety of movement is admitted of, as for instance the rotary motion.

(*d*) Not answered.

(*e*) The Radius is the large bone of the arm.

It is united at the upper extremity with the humerous, and forms the elbow. At the other extremity it is united with the carpus.

The Ulna is the small bone of the arm, It is nearly with the Radius, and is joined with it to the humerous and carpus, forming two hinges thus giving strength, suppleness and elasticity to the arm.

(*f*) (1) The radius is conected with the bones of the rist at one of the extremities and at the other with the ulna in such a manner as to permit of a rolling motion; while the ulna is connected with the bone of the arm at the elbow and at the other to the radius & bones of the rist so as to produce the rolling motion of the fore arm

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8. Describe the various parts of the vocal tube, that have an agency in articulation.

(*a*) The vocal tube is composed of several bones and cartilages, the Thyroid, Cricoid, the two Arytenoid, and the Epiglottis and Vocal chords. The sound in articulation is made by the air expelled from the lungs striking on these chords.

(*b*) The parts of the Vocal tube are the Larnyx, Trachea Bronchia.

The larnyx is the upper part of the Vocal tube and creates the sound which we hear in speaking or singing, the Trachea and Bronchia carry the air to the Larnyx, from the lungs.

(*c*) Arytenoid cartilages and vocal cords help to produce sound. Their are two arytenoid cartelages they are triangular in shape and are place on the criroid cartilage. The vocal cords are firm and longitudinal in shape and are attached to the arytenoid cartilages. The thyroid and the criroid cartilages do not produce sound.

(*d*) The larynx.
(*e*) The Larynx is composed of cartliages having the shape of a cone reversed, to which is attached the extremity or root of the tongue. There are four folds of membrane stretched across the cavity called vocal cords, on each side is the glottis. The cavity between the upper and lower vocal cord is called the ventricle of the larynx.
(*f*) The vocal tube consists of the larynx and its connections. the larynx is composed of five cartilages constructed in such a manner as to form a hollow tube, across this is streched four cords called vocal cords, which are the principal agents in producing sound these are opperated upon by the air which passes through them to and from the lungs, and also by mussels which causes them to expand and concract thus serving the purpose the different kinds of instruments

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9. What is the object of the external ear? What is the use of its ridges and prominences?

(*a*) The object of the external ear is to collect and transmit sounds to the internal ear. The ridges and prominences are useful in collecting sounds from different directions and modulating them before sending them to the internal ear.
(*b*) (1) The object of the external ear is to catch the sounds and carry them to the Tympanum.
(2) They are for the purpose gathering the sounds from different directions and to modify them before they enter the head.
(*c*) The object of the external ear is to collect sounds. The ridges and prominences retain the sound better thus keeping it from being diffused so easily.
(*d*) It protects the inner part, the ridges are supposed to have no particular use, except to distinguish the form of our ear from that of the lower animals (the donkey for instance)
(*e*) To catch sound and transmit it to the internal ear. They are used to convey sound and also to keep out insects and also anything else that would tend to injure the ear.
(*f*) (1) To colect the sounds which are conveyed to the internal ear
(2) they also aid in modifying the sound.

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10. How many coats has the eye? Describe the arrangement of the parts of the eye.

(*a*). The eye has three coats; the retina, choroid, and schlerotica. The outer covering at the front of the eye is called the cornea, and it is received in the edge of the schlerotica or outer covering of the eye like the crystal of a watch. Secondly, the iris, or colored part of the eye is placed next to the cornea and in the center of it is a circular opening called the pupil. Back of this and occupying the center or body of the eye are the vitreous humor, crystalline lens, and aqueous humor. The inner coating of the eye is called the retina and is an expansion of the optic nerve which enters the eye at the back through the schlerotica. The middle coat of the eye is the choroid, and the outer the schlerotica.

(*b*). The Crystelline Lens Aqueous Humor Pupil, Vitrious Humor Oris Retina.

(*c*) The eye has four coats. The schlerotic, choroid, iris, retina, cilliary process. The schlerotic is commonly called the white of the eye therefore covers the front of the eye. In contact with this coat is the iris it is the colored portion of the eye. Back of the schlerotic coat is the choroid coat it is chocolat color. The retina is an expansion of the optic nerve it is seen by looking into the pupil of the eye. Their are three humors, the aqueous, vitreous, and crystaline lens. The aqueous humor is placed first it is watery. Vitreous humor is next, the crystaline lens is next or last.

(*d*) Three coats. The retina lines the back of the eye, the iris surrounds the pupil, the pupil is in the centre of the eye, the cornea is on the outside of the visible part of the eyeball.

(*e*) It has three coats.

1st coat is the Sclerotic, or white of the eye.

2nd The Cornea or transparent globe.

3rd The Choroid Coat or dark color on the inner surface.

The Iris or color of the eye in the centre of which is the pupil.

The Retina is the innermost coat of the eye.

(*f*) (1) Three (2) The sclerotic coat is on the outside & forms that portion called the white of the eye; the cornea is connected with it and covers the anterior portion of the eye. The next coat consists of choroid the iris & sciliary process, the iris with the pupl forms the partition between the posterior & anterior (portions) chambers of the eye; behind this is the sciliary processes. The iner coat is the cornea which receives the impression which is made by the light in passing throug crystaline lens and humors of the eye, The cristaline lens is situated in front of the vitrous & posterior to the aqueous humor, and a perfect lens.

Comments on the above are unnecessary. If such examinations qualify candidates and entitle them, in the estimation of County Boards, to First Grade State Certificates, what must be the examinations upon which only County Certificates of the Second or Third Grades are granted! And yet the holders of Second and Third Grade Certificates are placed in charge of the lowest grades of schools, where unfitness in temperament, education, and habits works greater and more irreparable injury than in the higher grades of schools..

Various are the devices employed by County Boards to grant certificates to favorites, no matter how lamentably they may have failed. For instance, should a candidate obtain only twenty credits in a study the maximum for which is fifty, the maximum is reduced one half. Then extra credits are added, contrary to law; some studies, in which the candidate is weakest, are altogether omitted, and deducted from the standard. Credits obtained in other studies are called "extras," and while added in the total upon which to calculate the percentage, are omitted from the total which determines that percentage. Thus, sometimes, five or ten per cent are added to the standing of a candidate, and he secures a certificate.

It is no wonder that thousands so early lose their bright eagerness, that wonderment and intelligent curiosity for which our American children are especially noted; for we subject them, "not to the generous care of men and women imbued with a love for intellectual and spiritual

growth; and fully capable of stimulating, controlling, and guiding the faculties of mind and spirit, but, on the contrary, to those who, by reason of their inefficiency, become, at the very best, sorely-tried guards and repressors." No wonder that there is "no recognition and intelligent sympathy between the little world, little lessons, and little books within the school house, and the great world, great lessons, and wonderful books outside the school house," when our experience in actual examination presents such a satire on professional efficiency. No wonder our pupils are no good and sure spellers, for our teachers are not. No wonder our pupils are innocent of any knowledge of the primary rules pertaining to punctuation, the use of capitals, and the common proprieties of letter writing, and English composition, when our teachers have no such knowledge, or if they have, do not crystallize it into practice. Not one letter in a hundred written by teachers to this department is properly dated, addressed, and punctuated. And lastly, no wonder that the attention paid to the morals and manners of the pupils is so unsatisfactory, when the manners of the teacher are never inquired into, and his morals are satisfactory if he has not been guilty of any gross or notorious violation of the decalogue.

Of course there are honored exceptions. There are plenty of men and women who feel a call to be teachers; but their number is lamentably small beside those who for the time can do nothing else, and, accordingly, "take a turn at teaching." There are very many candidates who have the requisite literary culture to become teachers, and who, after entering the school-room, strive to master the science of teaching. But even here this mastery is gained at some expense to the interests of the pupils. If such teachers had passed through a Normal course, they would gain, in a brief time, what years of experience may fail to supply, and they would enter the schools with a fund of skill which now they must painfully accumulate through repeated failures. But the educational work, as a whole, is intrusted, as an Iowa County Superintendent well remarked, "mainly to inexperienced children—children, even though some of them are advanced in years; for, though physically of full size, but few of them have reached the intellectual stature of men and women."

The only remedy for this crying evil of incompetent teachers is to exact that every candidate for the profession pass through a Normal School; in this he will be trained in a thorough knowledge of the subjects to be taught and in the science of teaching, and will, in model classes or a training school, acquire that skill which is the first requisite to a teacher. It is not professed that even then every incompetent person will be kept from without the profession, but every teacher will have received at least a thorough and careful training. And an efficient supervision will then do much to keep at a minimum any incompetency which still may linger in the schools.

But as a preliminary step we must have longer school terms, and pay more adequate compensation for teachers' services. Perhaps the salaries paid at present are adequate enough, in most cases, if the terms for which the schools are kept, were longer. Give every school district in the State sufficient funds for an eight months school, and inside a year we can draw a thousand Normal School graduates from the Eastern States. With a generous support of her schools, California has not need to employ a single untrained teacher: if we can assure them of permanent situations, for years almost all the graduates of the Normal Schools East of the Rocky Mountains will flock to the Golden State; for

to almost every Eastern teacher, California is indeed still the "Golden State," the "El Dorado."

There need be no fear that when once trained teachers are demanded by law, the supply will not equal the demand. It will then not be long before that magnificent building at San José will be crowded to its utmost capacity, and additional Normal Schools be required. The State has assumed the task of providing education for the people. To be true to this trust, the State must provide for the wants of the schools, and one of the most pressing of these is trained teachers. The State must provide by statute, that every teacher have a professional training. If the teachers, now employed in the schools, have gained this training in the school-room, well and good; but in future, the preliminary training must be acquired in Normal Schools, and not at the expense of successive classes. It is not enough that a candidate for the profession is not ignorant as far as knowledge is concerned — he must not be ignorant as a *teacher*.

"'All roads lead to Rome;' so all lines of educational improvement converge to one central object—*the teacher*. The importance of other elements that go to make up a good school may be and often are overestimated. Not so with the teacher. The teacher *is* the school. How to secure a teacher who understands and loves his work—this is the educational problem at all times and in every place. It is a comparatively easy matter to build good school houses and make a judicious choice of text books, and draw up a rational and sound scheme of instruction; but to furnish such teachers as are needed is a very different thing."—[Supt. Philbrick of Boston.

The condition of the teaching profession is a matter of public concern. Above whatever else concerns the schools, the teacher stands preëminent in his power to further, retard, or altogether defeat the ends of popular education. No more subtle power than the teacher's influence can be conceived for the shaping of the mental habits and moral intrepidity of the youth of our country. No age equals our own in placing in the hands of the teacher the dearest, highest interests of society.

Jealously must society watch that these hands are worthy of the trust. We must no longer be contented to bear with an unworthy teacher, in hopes that the beginning of next term will bring a change for the better. We must no longer trust to chance for sending us a trained teacher; we must demand trained teachers as our due, and trained teachers will be supplied.

CONCLUSION.

There are a number of minor questions which might profitably engage our attention: such as the supervision of schools, county teachers' institutes, course of studies, etc. But the importance of these questions is as naught compared with the importance of the three questions which form the subject of my report. School supervision, county teachers' institutes, and the course of studies can do little to negative the grave defects and shortcomings of our public school system. While more and better school work is being done in this State than ever before; while the terms for which schools are maintained are slowly lengthening; while we are, in short, advancing in our work of popular education,

it cannot be affirmed emphatically enough that this advancement is far out of proportion to the possibilities within our reach. We can, if we exact it, obtain the full measure of the amount and quality of education needed by our children: but the only way to exact this is to keep our schools open the whole year round, and to entrust them only to the hands of qualified instructors.

These two—long terms and qualified teachers—are the real educational forces of the State; and with them at our command, the prosperity, efficiency, and usefulness of our common schools will be insured beyond peradventure.

Appended will be found the Statistical Tables, showing the condition and progress of the public schools of our State; the work of the State Board of Education, together with the Course of Studies and a list of the text books and library books; the work of the State Board of Examination, together with a complete list of the holders of State Certificates and Diplomas; the work of the State Normal School, of the State University, of the Asylum for the Deaf, Dumb, and the Blind, and of the most prominent private institutions of learning.

The proposed amendments to our school law, except those treated of in this report, are of the nature more of corrections of inconsistencies, oversights, and errors, than of amendments; and it is therefore not necessary to cumber this report with their discussion.

HENRY N. BOLANDER,
Superintendent of Public Instruction.

APPENDIX.

I. STATISTICAL TABLES.

TABLE No. 1.

School Census Marshal's statistics for the school years endiny June thirtieth, eighteen hundred and seventy-two and eighteen hundred and seventy-three.

COUNTIES.	NUMBER OF WHITE CHILDREN BETWEEN FIVE AND FIFTEEN YEARS OF AGE.					
	1872.			1873.		
	Boys.	Girls.	Totals.	Boys.	Girls.	Totals.
Alameda	3,254	3,200	6,454	3,310	3,392	6,702
Alpine	55	48	103	58	55	113
Amador	1,060	1,006	2,066	1,065	1,039	2,104
Butte	1,302	1,235	2,537	1,358	1,284	2,642
Calaveras	1,153	1,089	2,242	1,105	1,072	2,177
Colusa	819	771	1,590	861	785	1,646
Contra Costa	1,282	1,191	2,473	1,330	1,254	2,584
Del Norte	145	134	279	161	161	322
El Dorado	1,221	1,120	2,341	1,174	1,085	2,259
Fresno	442	429	871	512	489	1,001
Humboldt	991	901	1,892	1,044	966	2,010
Inyo	125	131	256	143	151	294
Kern	234	225	459	310	285	595
Klamath	81	85	166	89	87	176
Lake	507	481	988	496	516	1,012
Lassen	234	202	436	281	269	550
Los Angeles	3,049	2,957	6,006	3,046	2,968	6,014
Marin	890	605	1,495	776	622	1,398
Mariposa	435	397	832	471	436	907
Mendocino	1,146	1,152	2,298	1,173	1,117	2,290
Merced	465	431	896	460	455	915
Mono	53	32	85	52	38	90
Monterey	1,845	1,576	3,421	1,939	1,692	3,631
Napa	1,058	979	2,037	1,038	1,047	2,085
Nevada	2,090	2,044	4,134	2,086	2,027	4,113
Placer	1,114	1,197	2,211	1,099	1,052	2,151
Plumas	355	341	696	390	361	751
Sacramento	2,750	2,775	5,525	2,679	2,663	5,342
San Bernardino	828	749	1,577	812	727	1,539
San Diego	680	609	1,289	643	582	1,225
San Francisco	15,780	16,006	31,786	16,869	17,407	34,276
San Joaquin	2,414	2,423	4,837	2,248	2,326	4,574
San Luis Obispo	719	670	1,389	845	776	1,621
San Mateo	1,025	880	1,905	1,050	928	1,978
Santa Barbara	1,179	1,103	2,282	893	801	1,694
Santa Clara	3,199	3,181	6,380	3,360	3,358	6,718
Santa Cruz	1,377	1,301	2,678	1,399	1,257	2,656
Shasta	597	557	1,154	639	582	1,221
Sierra	499	503	1,002	470	502	972
Siskiyou	1,180	1,012	2,192	1,221	1,115	2,336
Solano	1,893	1,854	3,747	1,869	1,808	3,677
Sonoma	3,057	2,993	6,050	2,964	2,871	5,835
Stanislaus	760	741	1,501	882	822	1,704
Sutter	655	651	1,306	637	642	1,279
Tehama	556	524	1,080	588	551	1,139
Trinity	237	204	441	237	231	468
Tulare	752	741	1,493	880	834	1,714
Tuolumne	1,003	887	1,890	908	864	1,772
Ventura	.....	.....	.....	483	454	937
Yolo	1,079	1,001	2,080	1,084	1,008	2,092
Yuba	1,216	1,134	2,350	1,202	1,093	2,295
Totals	68,840	66,358	135,198	70,689	68,907	139,596

TABLE No. 1—Continued.

COUNTIES.	NUMBER OF NEGRO CHILDREN BETWEEN FIVE AND FIFTEEN YEARS OF AGE.					
	1872.			1873.		
	Boys.	Girls.	Totals.	Boys.	Girls.	Totals.
Alameda	13	21	34	17	21	38
Alpine	.....	.....	.....	.....	.....	.....
Amador	14	13	27	13	11	24
Butte	19	10	29	15	12	27
Calaveras	3	1	4	3	1	4
Colusa	8	4	12	10	10	20
Contra Costa	1	3	4	5	4	9
Del Norte	1	1	2	.....	2	2
El Dorado	10	13	23	7	14	21
Fresno	7	5	12	6	1	7
Humboldt	1	2	3	1	4	5
Inyo	.....	3	3	.....	.....	.....
Kern	.....	.....	.....	1	.....	1
Klamath	.....	.....	.....	.....	.....	.....
Lake	.....	.....	.....	1	.....	1
Lassen	.....	.....	.....	.....	.....	.....
Los Angeles	30	21	51	22	23	45
Marin	.....	1	1	.....	3	3
Mariposa	10	10	20	10	16	26
Mendocino	3	8	11	.....	.....	.....
Merced	8	2	10	8	3	11
Mono	.....	.....	.....	.....	.....	.....
Monterey	8	3	11	6	2	8
Napa	10	7	17	10	8	18
Nevada	19	19	38	15	19	34
Placer	4	3	7	2	4	6
Plumas	.....	.....	.....	.....	.....	.....
Sacramento	42	36	78	45	22	67
San Bernardino	3	2	5	1	2	3
San Diego	5	5	10	10	6	16
San Francisco	91	41	132	131	62	193
San Joaquin	23	19	42	19	16	35
San Luis Obispo	.....	3	3	.....	1	1
San Mateo	.....	.....	.....	.....	.....	.....
Santa Barbara	1	1	2	1	1	2
Santa Clara	23	28	51	21	17	38
Santa Cruz	11	7	18	12	6	18
Shasta	3	2	5	3	2	5
Sierra	4	3	7	4	3	7
Siskiyou	11	7	18	14	4	18
Solano	15	11	26	13	14	27
Sonoma	6	7	13	10	10	20
Stanislaus	7	.....	7	8	.....	8
Sutter	3	.....	3	4	3	7
Tehama	21	14	35	22	17	39
Trinity	4	5	9	3	2	5
Tulare	8	5	13	18	10	28
Tuolumne	11	9	20	7	9	16
Ventura	.....	.....	.....	.....	.....	.....
Yolo	8	4	12	10	6	16
Yuba	20	26	46	30	35	65
Totals	489	385	874	538	406	944

TABLE No. 1—Continued.

COUNTIES.	NUMBER OF INDIAN CHILDREN BETWEEN FIVE AND FIFTEEN YEARS OF AGE.					
	1872.			1873.		
	Boys.	Girls.	Totals.	Boys.	Girls.	Totals.
Alameda	2	6	8	3	8	11
Alpine						
Amador	2	2	4	4	2	6
Butte	34	23	57	23	15	38
Calaveras	3	3	6	19	15	34
Colusa	17	14	31	12	8	20
Contra Costa	6	5	11	4	6	10
Del Norte	18	16	34	14	10	24
El Dorado	20	11	31	15	9	24
Fresno	24	18	42	32	15	47
Humboldt	25	19	44	26	18	44
Inyo						
Kern				10	8	18
Klamath	39	53	92	42	58	100
Lake	7	5	12	5	3	8
Lassen	1	3	4	1	3	4
Los Angeles	57	59	116	21	21	42
Marin	1	5	6	4	5	9
Mariposa	17	6	23	16	7	23
Mendocino	93	68	161	67	50	117
Merced	1	1	2	1		1
Mono	1	1	2			
Monterey	10	7	17	4		4
Napa	10	4	14	4	2	6
Nevada	1	6	7	5	2	7
Placer	6	5	11	5	4	9
Plumas	3	1	4	5	5	10
Sacramento	12	7	19	8	8	16
San Bernardino	1		1	15	5	20
San Diego	58	50	108	30	26	56
San Francisco	5	13	18			
San Joaquin						
San Luis Obispo	7	5	12	8	3	11
San Mateo	1	2	3			
Santa Barbara	12	5	17	9	1	10
Santa Clara	1	4	5	4	2	6
Santa Cruz				2	1	3
Shasta	61	57	118	48	53	101
Sierra				1		1
Siskiyou	22	18	40	28	18	46
Solano	2	3	5	3	9	12
Sonoma	43	21	64	25	19	44
Stanislaus						
Sutter	2	2	4	1	3	4
Tehama	19	14	33	11	5	16
Trinity	41	17	58	39	18	57
Tulare	6	2	8	6	3	9
Tuolumne	1	1	2	4	2	6
Ventura						
Yolo	8	1	9	9	2	11
Yuba	8	8	16	8	17	25
Totals	708	571	1,279	601	469	1,070

TABLE No. 1—Continued.

COUNTIES.	TOTAL NUMBER OF CENSUS CHILDREN BETWEEN FIVE AND FIFTEEN YEARS OF AGE.	
	1872.	1873.
Alameda	6,496	6,751
Alpine	103	113
Amador	2,097	2,134
Butte	2,623	2,707
Calaveras	2,252	2,215
Colusa	1,633	1,686
Contra Costa	2,488	2,603
Del Norte	315	348
El Dorado	2,395	2,304
Fresno	925	1,055
Humboldt	1,939	2,059
Inyo	259	294
Kern	459	614
Klamath	258	276
Lake	1,000	1,021
Lassen	440	554
Los Angeles	6,173	6,101
Marin	1,502	1,410
Mariposa	875	956
Mendocino	2,470	2,407
Merced	908	927
Mono	87	90
Monterey	3,449	3,643
Napa	2,068	2,109
Nevada	4,179	4,154
Placer	2,229	2,166
Plumas	700	761
Sacramento	5,622	5,425
San Bernardino	1,583	1,562
San Diego	1,407	1,297
San Francisco	31,936	34,469
San Joaquin	4,879	4,609
San Luis Obispo	1,404	1,633
San Mateo	1,908	1,978
Santa Barbara	2,301	1,706
Santa Clara	6,436	6,762
Santa Cruz	2,696	2,677
Shasta	1,277	1,327
Sierra	1,009	980
Siskiyou	2,250	2,400
Solano	3,778	3,716
Sonoma	6,127	5,899
Stanislaus	1,508	1,712
Sutter	1,313	1,290
Tehama	1,148	1,194
Trinity	508	530
Tulare	1,514	1,751
Tuolumne	1,912	1,794
Ventura	.....	937
Yolo	2,101	2,119
Yuba	2,412	2,385
Totals	137,351	141,610

Table No. 1—Continued.

COUNTIES.	Number of Children Under Five years of age in 1872.			
	White.	Negro.	Indian.	Totals.
Alameda	3,409	3	4	3,416
Alpine	57			57
Amador	886	3		889
Butte	1,080	14	1	1,095
Calaveras	794			794
Colusa	811		3	814
Contra Costa	1,226			1,226
Del Norte	166	2	9	177
El Dorado	853	7	9	869
Fresno	427	1	16	444
Humboldt	1,066	4	5	1,075
Inyo	138			138
Kern	262			262
Klamath	80		49	129
Lake	529			529
Lassen	165			165
Los Angeles	2,242	8	30	2,280
Marin	719		1	720
Mariposa	347	9		356
Mendocino	1,179	2	13	1,194
Merced	408	3	1	412
Mono	49			49
Monterey	1,579	1	5	1,585
Napa	997	14	1	1,012
Nevada	1,913	1		1,914
Placer	1,062	1		1,063
Plumas	410		1	411
Sacramento	3,475	46	1	3,522
San Bernardino	746	1	1	748
San Diego	482	2	19	503
San Francisco	20,330	54		20,384
San Joaquin	2,112			2,112
San Luis Obispo	767	1		768
San Mateo	820			820
Santa Barbara	1,046	2	1	1,049
Santa Clara	3,339	18		3,357
Santa Cruz	1,374	10	6	1,390
Shasta	521		26	547
Sierra	553	3		556
Siskiyou	925		10	935
Solano	2,010	4		2,014
Sonoma	2,524			2,524
Stanislaus	682			682
Sutter	609	1		610
Tehama	551	12	1	564
Trinity	228		25	253
Tulare	698	3		701
Tuolumne	641	8		649
Ventura				
Yolo	998	2	2	1,002
Yuba	937	14	7	958
Totals	69,222	254	247	69,723

Table No. 1—Continued.

COUNTIES.	Number of Children Under Five years of age in 1873.			
	White.	Negro.	Indian.	Totals.
Alameda	3,818	12	1	3,831
Alpine	61	.....	.....	61
Amador	878	10	2	890
Butte	1,108	17	3	1,128
Calaveras	715	.....	8	723
Colusa	978	6	4	988
Contra Costa	1,288	4	2	1,294
Del Norte	161	.....	8	169
El Dorado	834	8	10	852
Fresno	532	3	12	547
Humboldt	1,095	4	6	1,105
Inyo	191	.....	.....	191
Kern	327	.....	34	361
Klamath	84	.....	55	139
Lake	549	1	2	552
Lassen	274	.....	4	278
Los Angeles	2,461	3	11	2,475
Marin	786	2	.....	788
Mariposa	318	4	13	335
Mendocino	1,249	.....	26	1,275
Merced	476	4	.....	480
Mono	57	.....	.....	57
Monterey	1,725	.....	4	1,729
Napa	1,168	13	2	1,183
Nevada	1,677	15	1	1,693
Placer	913	.....	2	915
Plumas	432	.....	2	434
Sacramento	2,978	38	.....	3,016
San Bernardino	699	.....	7	706
San Diego	552	80	2	634
San Francisco	19,793	.....	.....	19,793
San Joaquin	1,966	13	.....	1,979
San Luis Obispo	771	.....	.....	771
San Mateo	789	.....	.....	789
Santa Barbara	761	4	1	766
Santa Clara	3,288	21	.....	3,309
Santa Cruz	1,370	5	8	1,383
Shasta	509	2	29	540
Sierra	495	2	.....	497
Siskiyou	1,004	6	12	1,022
Solano	1,982	11	1	1,994
Sonoma	2,518	3	9	2,530
Stanislaus	780	1	.....	781
Sutter	644	4	.....	648
Tehama	441	9	2	452
Trinity	204	.....	26	230
Tulare	776	4	1	781
Tuolumne	613	2	.....	615
Ventura	437	.....	8	445
Yolo	990	3	.....	993
Yuba	927	8	4	939
Totals	69,442	322	322	70,086

Table No. 1—Continued.

COUNTIES.	Number of Children between Five and Fifteen years of age who have attended Public Schools at any time during the year 1872.			
	White.	Negro.	Indian.	Totals.
Alameda	4,336	7	1	4,344
Alpine	103			103
Amador	1,531	3		1,534
Butte	1,918	20	1	1,939
Calaveras	1,517		4	1,521
Colusa	1,077	11	3	1,091
Contra Costa	1,874			1,874
Del Norte	232		25	257
El Dorado	1,752		14	1,766
Fresno	536			536
Humboldt	1,241		8	1,249
Inyo	179			179
Kern	247			247
Klamath	117		30	147
Lake	810			810
Lassen	312		3	315
Los Angeles	2,523	15		2,538
Marin	818			818
Mariposa	538	14		552
Mendocino	1,777		5	1,782
Merced	704	4		708
Mono	60			60
Monterey	2,037			2,037
Napa	1,482	14		1,496
Nevada	3,031	31		3,062
Placer	1,782			1,782
Plumas	502		2	504
Sacramento	3,900	49	8	3,957
San Bernardino	946			946
San Diego	904			904
San Francisco	21,301	79		21,380
San Joaquin	4,221	1		4,222
San Luis Obispo	602		1	603
San Mateo	1,088			1,088
Santa Barbara	1,042			1,042
Santa Clara	4,036	29		4,065
Santa Cruz	1,731	11		1,742
Shasta	867	4	22	893
Sierra	906	7		913
Siskiyou	1,525			1,525
Solano	2,778	15		2,793
Sonoma	4,520			4,520
Stanislaus	1,167	1		1,168
Sutter	1,079	1		1,080
Tehama	685	18		703
Trinity	324	3	15	342
Tulare	1,055			1,055
Tuolumne	1,290	12		1,302
Ventura				
Yolo	1,624		1	1,625
Yuba	1,628	36	1	1,665
Totals	92,255	385	144	92,784

TABLE No. 1—Continued.

COUNTIES.	NUMBER OF CHILDREN BETWEEN FIVE AND FIFTEEN YEARS OF AGE WHO HAVE ATTENDED PUBLIC SCHOOLS AT ANY TIME DURING THE YEAR 1873.			
	White.	Negro.	Indian.	Totals.
Alameda	4,682	33	.....	4,715
Alpine	78	.....	.....	78
Amador	1,570	20	.....	1,590
Butte	1,997	12	.....	2,009
Calaveras	1,517	.....	20	1,537
Colusa	1,241	2	7	1,250
Contra Costa	1,816	2	1	1,819
Del Norte	278	.....	15	293
El Dorado	1,763	7	14	1,784
Fresno	589	.....	19	608
Humboldt	1,372	1	10	1,383
Inyo	186	.....	.....	186
Kern	271	.....	2	273
Klamath	116	.....	56	172
Lake	733	.....	.....	733
Lassen	487	.....	.....	487
Los Angeles	2,883	8	1	2,892
Marin	897	.....	1	898
Mariposa	578	21	.....	599
Mendocino	1,810	.....	4	1,814
Merced	642	10	.....	652
Mono	74	.....	.....	74
Monterey	2,192	.....	.....	2,192
Napa	1,500	12	.....	1,512
Nevada	3,112	30	.....	3,142
Placer	1,745	1	.....	1,746
Plumas	556	.....	5	561
Sacramento	3,802	45	10	3,857
San Bernardino	987	.....	1	988
San Diego	599	.....	1	600
San Francisco	23,961	52	.....	24,013
San Joaquin	4,108	33	.....	4,141
San Luis Obispo	856	.....	.....	856
San Mateo	1,054	.....	.....	1,054
Santa Barbara	686	1	.....	687
Santa Clara	4,212	26	.....	4,238
Santa Cruz	1,761	9	.....	1,770
Shasta	888	3	19	910
Sierra	799	5	1	805
Siskiyou	1,716	13	2	1,731
Solano	2,617	23	.....	2,640
Sonoma	4,468	12	4	4,484
Stanislaus	1,310	.....	.....	1,310
Sutter	1,045	.....	.....	1,045
Tehama	781	33	2	816
Trinity	333	3	10	346
Tulare	1,195	.....	.....	1,195
Tuolumne	1,276	.....	.....	1,276
Ventura	607	.....	.....	607
Yolo	1,629	.....	.....	1,629
Yuba	1,643	41	.....	1,684
Totals	97,018	458	205	97,681

TABLE No. 1—Continued.

COUNTIES.	NUMBER OF CHILDREN BETWEEN FIVE AND FIFTEEN YEARS OF AGE WHO HAVE ATTENDED PRIVATE SCHOOLS AT ANY TIME DURING THE SCHOOL YEAR OF 1872.			
	White.	Negro.	Indian.	Totals.
Alameda	521	13	.....	534
Alpine	.....	.....	.....	.....
Amador	51	4	.....	55
Butte	49	.....	.....	49
Calaveras	179	.....	.....	179
Colusa	90	.....	.....	90
Contra Costa	79	.....	.....	79
Del Norte	9	.....	.....	9
El Dorado	72	.....	.....	72
Fresno	49	.....	.....	49
Humboldt	151	1	.....	152
Inyo	29	.....	.....	29
Kern	30	.....	.....	30
Klamath	.....	.....	.....	.....
Lake	10	.....	.....	10
Lassen	9	.....	.....	9
Los Angeles	760	5	1	766
Marin	365	.....	.....	365
Mariposa	13	3	.....	16
Mendocino	8	.....	7	15
Merced	83	.....	.....	83
Mono	5	.....	.....	5
Monterey	228	.....	.....	228
Napa	131	.....	.....	131
Nevada	444	.....	.....	444
Placer	83	2	.....	85
Plumas	14	.....	.....	14
Sacramento	669	8	.....	677
San Bernardino	107	.....	.....	107
San Diego	135	.....	4	139
San Francisco	5,047	14	.....	5,061
San Joaquin	.....	.....	.....	.....
San Luis Obispo	106	.....	1	107
San Mateo	329	.....	.....	329
Santa Barbara	202	.....	.....	202
Santa Clara	983	.....	.....	983
Santa Cruz	247	2	.....	249
Shasta	98	.....	6	104
Sierra	8	.....	.....	8
Siskiyou	58	18	1	77
Solano	545	.....	.....	545
Sonoma	677	.....	.....	677
Stanislaus	120	.....	.....	120
Sutter	40	1	.....	41
Tehama	31	5	.....	36
Trinity	15	.....	.....	15
Tulare	196	7	.....	203
Tuolumne	155	.....	.....	155
Ventura	.....	.....	.....	.....
Yolo	131	.....	.....	131
Yuba	316	7	.....	323
Totals	13,677	90	20	13,787

Table No. 1—Continued.

COUNTIES.	Number of Deaf and Dumb Children between Five and Twenty-one Years of Age.		Number of Blind Children between Five and Twenty-one Y'rs of Age.	
	1872.	1873.	1872.	1873.
Alameda	54	6	33	.....
Alpine	.....	.....	.....	.....
Amador	.....	.....	.....	.....
Butte	1	1	.....	.....
Calaveras	2	1	1	.....
Colusa	.....	.....	.....	.....
Contra Costa	1	1	.....	1
Del Norte	.....	1	.....	.....
El Dorado	1	.....	.....	.....
Fresno	.....	.....	.....	.....
Humboldt	.....	1	.....	1
Inyo	.....	.....	.....	.....
Kern	.....	.....	.....	.....
Klamath	.....	.....	.....	.....
Lake	.....	.....	1	.....
Lassen	.....	.....	.....	.....
Los Angeles	4	2	6	1
Marin	.....	.....	.....	1
Mariposa	1	1	1	1
Mendocino	.....	.....	1	.....
Merced	.....	.....	.....	.....
Mono	.....	.....	.....	.....
Monterey	3	1	.....	.....
Napa	2	2	.....	.....
Nevada	.....	.....	.....	.....
Placer	.....	.....	2	1
Plumas	.....	.....	.....	.....
Sacramento	3	3	1	.....
San Bernardino	3	.....	.....	.....
San Diego	.....	.....	.....	.....
San Francisco	.....	.....	.....	.....
San Joaquin	.....	3	.....	.....
San Luis Obispo	.....	1	.....	.....
San Mateo	1	1	.....	.....
Santa Barbara	3	1	1	1
Santa Clara	4	.....	.....	.....
Santa Cruz	.....	.....	.....	.....
Shasta	1	.....	2	.....
Sierra	.....	1	.....	.....
Siskiyou	1	1	.....	.....
Solano	1	1	3	.....
Sonoma	.....	1	.....	1
Stanislaus	.....	.....	.....	.....
Sutter	1	1	.....	.....
Tehama	1	.....	.....	.....
Trinity	.....	.....	.....	.....
Tulare	.....	.....	.....	.....
Tuolumne	.....	.....	.....	.....
Ventura	.....	.....	.....	.....
Yolo	.....	2	.....	1
Yuba	1	.....	3	.....
Totals	89	33	55	9

TABLE No. 2.

Statistics from reports of Public School Teachers.

COUNTIES.	Whole Number of Boys Enrolled.		Whole Number of Girls Enrolled.		Total Number Enrolled.	
	1872.	1873.	1872.	1873.	1872.	1873.
Alameda	2,194	2,421	2,263	2,365	4,457	4,786
Alpine	35	40	31	34	66	74
Amador	723	816	715	803	1,438	1,619
Butte	1,023	1,157	894	1,079	1,917	2,236
Calaveras	771	891	728	768	1,499	1,659
Colusa	608	741	568	583	1,176	1,324
Contra Costa	1,027	1,089	897	947	1,924	2,036
Del Norte	144	158	125	145	269	303
El Dorado	849	919	798	834	1,647	1,753
Fresno	251	326	254	322	505	648
Humboldt	882	971	718	795	1,600	1,766
Inyo	100	105	70	126	170	231
Kern	122	182	111	168	233	350
Klamath	51	78	57	72	108	150
Lake	419	448	394	408	813	856
Lassen	139	193	143	204	282	397
Los Angeles	1,322	1,669	1,147	1,450	2,469	3,119
Marin	471	559	437	499	908	1,058
Mariposa	286	339	293	315	579	654
Mendocino	821	952	734	905	1,555	1,857
Merced	353	368	305	339	658	707
Mono	39	41	18	31	57	72
Monterey	1,048	1,110	693	1,049	1,741	2,159
Napa	701	902	771	780	1,472	1,682
Nevada	1,622	1,796	1,389	1,701	3,011	3,497
Placer	831	923	857	873	1,688	1,796
Plumas	312	357	272	311	584	668
Sacramento	2,606	2,468	2,414	2,386	5,020	4,854
San Bernardino	594	531	476	486	1,070	1,017
San Diego	333	356	294	299	627	655
San Francisco	11,314	13,925	10,003	11,573	21,317	25,498
San Joaquin	2,286	2,060	2,169	2,138	4,455	4,198
San Luis Obispo	335	463	258	407	593	870
San Mateo	565	643	442	523	1,007	1,166
Santa Barbara	598	444	494	366	1,092	810
Santa Clara	2,486	2,670	2,097	2,330	4,583	5,000
Santa Cruz	1,159	1,301	1,057	1,069	2,216	2,370
Shasta	385	509	354	447	739	956
Sierra	431	458	433	468	864	926
Siskiyou	843	963	742	786	1,585	1,749
Solano	1,599	1,819	1,290	1,541	2,889	3,360
Sonoma	2,132	2,437	2,011	2,512	4,143	4,949
Stanislaus	657	672	594	595	1,251	1,267
Sutter	672	707	583	639	1,255	1,346
Tehama	401	438	347	426	748	864
Trinity	172	201	141	167	313	368
Tulare	552	603	519	564	1,071	1,167
Tuolumne	696	666	592	582	1,288	1,248
Ventura	.....	342	.....	371	.....	613
Yolo	904	1,011	814	883	1,718	1,894
Yuba	900	1,109	1,150	882	2,050	1,991
Totals	49,764	56,247	44,956	51,346	94,720	107,593

TABLE No. 2—Continued.

COUNTIES.	AVERAGE NUMBER BELONGING.		AVERAGE DAILY ATTENDANCE.		PERCENTAGE OF ATTENDANCE ON AVERAGE NUMBER BELONGING.	
	1872.	1873.	1872.	1873.	1872.	1873.
Alameda	3,408	3,593	3,140	3,293	92.13	91.65
Alpine	22	62	20	45	90.90	70.33
Amador	1,094	1,174	1,000	1,057	91.40	90.01
Butte	1,590	1,574	1,398	1,424	87.98	90.27
Calaveras	1,118	1,057	996	934	89.08	88.36
Colusa	963	877	850	727	88.27	82.89
Contra Costa	1,324	1,295	1,173	966	88.59	74.59
Del Norte	212	243	194	209	91.50	86.01
El Dorado	1,459	1,305	1,292	1,164	87.86	89.19
Fresno	339	431	321	381	94.69	88.40
Humboldt	981	1,021	870	926	89.70	90.69
Inyo	121	171	106	148	87.60	86.55
Kern	159	223	139	203	87.42	91.04
Klamath	88	124	76	115	86.36	92.74
Lake	591	677	471	514	79.69	75.92
Lassen	228	341	207	312	90.78	94.49
Los Angeles	1,674	1,980	1,515	1,801	90.32	90.96
Marin	649	657	560	581	87.82	88.43
Mariposa	478	540	417	471	87.07	87.22
Mendocino	404	1,554	331	1,340	81.43	86.23
Merced	452	465	401	419	88.71	90.11
Mono	49	56	41	45	83.67	80.36
Monterey	1,362	1,512	1,329	1,343	97.57	88.27
Napa	1,260	1,246	1,129	1,109	89.60	89.
Nevada	2,152	2,325	1,927	2,045	89.49	87.96
Placer	1,288	1,287	1,132	1,114	87.81	86.56
Plumas	423	470	383	420	90.53	89.36
Sacramento	3,347	3,088	2,333	2,747	69.70	88.96
San Bernardino	682	744	593	669	86.95	89.92
San Diego	453	439	386	383	85.20	87.25
San Francisco	19,525	19,720	18,271	18,530	93.	93.97
San Joaquin	3,741	3,916	3,609	3,629	95.66	92.68
San Luis Obispo	446	635	388	564	86.99	88.82
San Mateo	750	799	671	688	89.46	86.11
Santa Barbara	691	402	617	358	89.29	89.55
Santa Clara	3,038	3,249	2,672	2,919	88.	89.84
Santa Cruz	1,402	1,554	1,230	1,309	87.73	84.23
Shasta	620	746	569	680	91.77	91.15
Sierra	788	696	711	612	90.22	87.93
Siskiyou	1,351	1,445	1,202	1,296	88.95	89.69
Solano	2,395	2,150	2,194	1,964	91.60	91.81
Sonoma	2,903	4,135	2,583	3,502	82.80	84.89
Stanislaus	971	897	847	792	87.22	88.32
Sutter	881	921	782	806	88.76	87.51
Tehama	458	595	396	526	83.24	88.40
Trinity	284	246	259	227	91.	92.28
Tulare	896	813	801	710	89.36	87.33
Tuolumne	865	917	771	841	87.	91.74
Ventura	.....	392	.....	348	.....	88.78
Yolo	1,204	1,177	1,168	1,042	97.06	89.38
Yuba	1,393	1,357	1,229	1,213	88.22	89.38
Totals	72,972	78,395	65,700	69,461		
Average	.....	.....	.....	.....	90.03	88.60

TABLE No. 3.

SHOWING, FOR THE SCHOOL YEAR ENDING JUNE 30TH, 1873, THE NUMBER OF CENSUS CHILDREN, THE NUMBER OF CHILDREN ENROLLED AND ATTENDING SCHOOL, THE NUMBER OF TEACHERS EMPLOYED, AND THE CURRENT EXPENSES.

TABLE No. 3.

Showing, for the school year ending June thirtieth, eighteen hundred and seventy-three, the number of census children, the number of children enrolled and attending school, the number of teachers employed, and the current expenses.

COUNTIES.	For Districts Maintaining a Ten Months' School.						
	Number of districts.	Number of census children.	No. of census children enrolled in public schools.	Total number children enrolled in public schools.	Average number belonging to public schools.	Number of teachers employed.	Current expenses.
Alameda	14	5,338	3,705	3,817	2,944	82	$82,488 89
Alpine							
Amador	1	312	253	286	156	4	2,222 15
Butte							
Calaveras	4	655	364	389	224	6	4,418 40
Colusa							
Contra Costa	3	571	322	390	226	6	2,705 19
Del Norte							
El Dorado	5	663	502	519	377	8	5,639 44
Fresno	2	158	92	89	55	3	2,798 47
Humboldt	2	682	422	564	331	10	6,464 00
Inyo							
Kern	2	351	139	204	122	5	3,368 84
Klamath	1	71	50	43	38	1	978 75
Lake							
Lassen							
Los Angeles	7	1,076	552	649	361	8	8,595 99
Marin	5	583	318	408	234	8	6,520 26
Mariposa	2	117	81	113	105	2	1,177 25

Mendocino	1	331	271	311	228	4	4,166 27
Merced	4	234	197	265	179	5	4,040 79
Mono							
Monterey	3	523	355	406	231	6	4,656 83
Napa	1	585	361	326	265	6	5,157 67
Nevada	12	2,562	1,890	2,175	1,480	29	29,613 51
Placer	1	61	44	41	35	1	1,101 77
Plumas	2	158	135	139	99	2	2,169 84
Sacramento	5	3,618	2,341	3,046	1,891	45	63,317 28
San Bernardino	1	142	68	60	39	1	889 00
San Diego							
San Francisco	12	34,469	24,214	25,498	19,720	506	579,461 62
San Joaquin	5	1,909	1,486	2,183	2,022	30	27,539 40
San Luis Obispo	2	597	260	270	184	5	3,840 08
San Mateo	4	788	439	470	325	8	7,485 87
Santa Barbara	2	1,063	446	545	255	6	6,907 16
Santa Clara	8	3,800	2,254	2,906	1,871	43	44,307 69
Santa Cruz	4	1,551	1,045	1,511	920	22	15,392 10
Shasta	1	50	19	24	16	1	561 75
Sierra	2	201	174	218	167	4	3,769 38
Siskiyou							
Solano	3	1,881	1,190	1,575	1,013	9	27,252 01
Sonoma	4	1,291	883	1,072	863	14	11,303 30
Stanislaus	1	78	66	69	43	1	1,094 91
Sutter							
Tehama							
Trinity							
Tulare							
Tuolumne	1	107	78	46	36	1	846 51
Ventura	2	475	289	327	171	5	4,512 97
Yolo	4	351	240	251	163	5	4,757 31
Yuba	2	1,199	764	939	565	13	13,283 51
Totals	135	68,601	46,309	52,144	37,954	915	$994,806 16

TABLE No. 3—Continued.

COUNTIES.	FOR DISTRICTS MAINTAINING A NINE MONTHS' SCHOOL.						
	Number of districts.	Number of census children.	No. of census children enrolled in public schools.	Total number of children enrolled in public schools.	Average number belonging to public schools.	Number of teachers employed.	Current expenses.
Alameda	5	434	296	329	203	5	$4,352 72
Alpine							
Amador	2	182	146	166	123	3	1,463 58
Butte	3	434	306	324	207	5	4,761 86
Calaveras							
Colusa	2	304	216	254	161	5	5,676 08
Contra Costa							
Del Norte							
El Dorado	1	108	94	109	74	1	1,309 99
Fresno	1	19	10	20	11	1	687 80
Humboldt	1	25	23	35	25	1	480 35
Inyo							
Kern	3	127	77	86	58	3	1,881 47
Klamath							
Lake	2	185	103	122	91	2	1,823 01
Lassen	1	45	45	47	42	2	609 93
Los Angeles	5	2,748	1,224	1,338	899	13	15,809 43
Marin	1	34	34	32	26	1	834 63
Mariposa	2	287	170	210	147	3	2,833 75
Mendocino							
Merced	4	208	128	136	87	4	2,783 47
Mono							
Monterey	5	610	302	304	218	8	5,875 14
Napa	4	287	233	287	187	6	4,181 87
Nevada	7	633	528	542	388	9	7,641 87
Placer	5	594	501	517	370	8	6,798 71
Plumas	2	104	78	106	69	2	1,329 59
Sacramento	13	604	525	634	412	13	9,456 33
San Bernardino	1	80	34	50	27	1	603 00

San Diego	2	497	299	302	205	4	4,833 58
San Francisco							
San Joaquin							
San Luis Obispo	1	164	81	82	69	2	902 99
San Mateo							
Santa Barbara							
Santa Clara	1	230	113	197	79	2	1,367 26
Santa Cruz	3	228	128	178	83	4	2,450 38
Shasta	1	44	28	31	17	1	412 80
Sierra	3	187	167	182	139	3	2,891 70
Siskiyou	1	380	293	293	219	3	4,363 75
Solano	3	220	179	245	151	5	3,633 35
Sonoma	2	441	338	348	273	4	1,641 31
Stanislaus	2	87	67	67	462	2	1,386 35
Sutter	1	41	34	48	27	1	714 00
Tehama							
Trinity							
Tulare	1	126	67	62	40	1	1,283 74
Tuolumne	3	809	501	469	375	7	5,052 26
Ventura	1	89	28	43	21	1	674 65
Yolo	5	230	201	241	156	5	4,193 74
Yuba							
Totals	100	11,775	7,598	8,433	6,141	141	$106,996 44

TABLE No. 3—Continued.

COUNTIES.	FOR DISTRICTS MAINTAINING AN EIGHT MONTHS' SCHOOL.						
	Number of districts.	Number of census children.	No. of census children enrolled in public schools.	Total number of children enrolled in public schools.	Average number belonging to public schools.	Number of teachers employed.	Current expenses.
Alameda	9	583	447	423	309	9	$5,759 05
Alpine	1	43	28	26	18	1	772 50
Amador	8	931	651	604	452	11	7,711 55
Butte	6	870	653	816	570	13	9,527 07
Calaveras	6	494	398	472	310	8	4,123 61
Colusa	13	659	487	509	308	13	9,881 72
Contra Costa	14	1,165	876	954	607	19	11,593 33
Del Norte	1	173	163	129	106	3	1,736 40
El Dorado	1	58	44	57	38	1	765 98
Fresno	4	355	166	195	140	5	4,448 62
Humboldt	12	864	639	776	465	14	9,638 65
Inyo	1	40	18	24	10	1	838 25
Kern							
Klamath	3	172	112	97	76	3	2,017 20
Lake	12	603	482	574	454	12	8,518 29
Lassen	4	269	231	133	119	6	2,479 86
Los Angeles	4	461	186	230	118	4	3,059 77
Marin	12	599	434	507	332	12	8,462 31
Mariposa							
Mendocino	28	1,667	1,260	1,293	1,127	29	18,486 48
Merced	4	92	80	81	58	4	2,479 33
Mono							
Monterey	7	809	489	501	293	8	5,332 91
Napa	5	237	166	192	130	5	2,589 41
Nevada	6	330	236	272	187	6	3,904 82
Placer	14	703	565	587	434	14	9,140 06
Plumas	4	230	164	202	142	5	3,181 31
Sacramento	16	480	394	491	321	17	7,768 49
San Bernardino	3	223	123	119	82	3	1,864 98

San Diego	2	198	64	65	41	2	1,758 91
San Francisco							
San Joaquin	59	2,515	2,472	1,819	1,730	81	69,401 08
San Luis Obispo	2	135	93	107	78	2	1,102 63
San Mateo	5	584	271	331	193	8	5,382 16
Santa Barbara	3	427	164	183	97	3	2,248 59
Santa Clara	21	1,406	934	962	621	22	14,079 56
Santa Cruz	5	276	191	203	127	5	3,096 02
Shasta	2	185	162	177	129	2	2,274 23
Sierra	11	456	357	394	290	11	7,326 82
Siskiyou	4	205	152	152	120	4	1,711 57
Solano	16	991	780	938	589	19	14,283 59
Sonoma	13	1,204	901	905	625	15	10,211 40
Stanislaus	9	615	494	463	319	10	6,875 78
Sutter	22	800	638	817	564	22	15,366 64
Tehama	4	499	326	366	272	8	5,840 63
Trinity	4	364	265	271	173	5	3,567 54
Tulare	3	452	291	402	264	5	3,362 57
Tuolumne	4	322	250	260	196	5	2,224 40
Ventura	2	126	98	116	52	2	1,668 28
Yolo	13	967	726	867	532	17	13,569 83
Yuba							
Totals	402	25,832	18,121	20,062	14,218	474	$331,329 18

TABLE No. 3—Continued.

COUNTIES.	FOR DISTRICTS MAINTAINING A SEVEN MONTHS' SCHOOL.						
	Number of districts.	Number of census children.	No. of census children enrolled in public schools.	Total number of children enrolled in public schools.	Average number belonging to public schools.	Number of teachers employed.	Current expenses.
Alameda	3	165	93	109	58	3	$1,452 43
Alpine							
Amador	4	240	175	191	138	5	2,156 67
Butte	8	416	294	327	229	8	4,215 45
Calaveras	2	154	123	103	71	2	930 00
Colusa	6	235	158	190	134	6	3,936 27
Contra Costa	5	323	249	276	190	5	2,976 73
Del Norte							
El Dorado	5	353	260	222	175	5	2,549 25
Fresno	4	201	121	158	98	5	3,232 87
Humboldt	6	282	174	234	124	6	3,191 91
Inyo	2	89	68	87	42	2	2,269 84
Kern							
Klamath							
Lake	1	64	46	47	41	1	615 34
Lassen	3	186	157	193	157	4	2,593 95
Los Angeles	2	174	146	169	110	3	1,668 39
Marin	1	48	34	28	15	1	653 00
Mariposa	1	152	103	91	88	2	1,129 87
Mendocino	1	48	23	25	19	1	395 15
Merced	2	111	93	93	71	2	1,602 25
Mono	1	27	24	24		1	349 50
Monterey	9	821	494	519	362	10	5,353 49
Napa	6	179	144	184	119	6	2,803 86
Nevada	3	153	147	152	99	3	1,891 16
Placer	9	350	257	245	171	9	4,381 83
Plumas	3	54	46	79	52	3	924 71
Sacramento	[illegible]	130	363	416	276	11	6,451 81
San Bernardino	[illegible]		97	317	239	6	3,122 87
	[illegible]						

TABLE No. 3—Continued.

COUNTIES.	FOR DISTRICTS MAINTAINING A SEVEN MONTHS' SCHOOL.						
	Number of districts.	Number of census children.	No. of census children enrolled in public schools.	Total number of children enrolled in public schools.	Average number belonging to public schools.	Number of teachers employed.	Current expenses.
Alameda	3	165	98	109	58	3	$1,452 43
Alpine							
Amador	4	240	175	191	138	5	2,156 67
Butte	8	416	294	327	229	8	4,215 45
Calaveras	2	154	123	103	71	2	930 00
Colusa	6	235	158	190	134	6	3,936 27
Contra Costa	5	323	249	276	190	5	2,976 73
Del Norte							
[illegible] Dorado	5	353	260	222	175	5	2,549 25
[illegible]no	4	201	121	158	98	5	3,232 87
[illegible]boldt	6	282	174	234	124	6	3,191 91
[illegible]	2	89	68	87	42	2	2,269 84
[illegible]							
[illegible]ch							
[illegible]	1	64	46	47	41	1	615 34
[illegible]sen	3	186	157	193	157	4	2,593 95
[illegible] Angeles	2	174	146	169	110	3	1,668 39
[illegible]rin	1	48	34	28	15	1	653 00
[illegible]iposa	1	152	103	91	88	2	1,129 87
[illegible]ocino	1	48	23	25	19	1	395 15
[illegible]d	2	111	93	93	71	2	1,602 25
[illegible]	1	27	24	24		1	349 50
[illegible]rey	9	821	494	519	362	10	5,353 49
[illegible]	6	179	144	184	119	6	2,803 86
Nevada	3	153	147	152	99	3	1,891 16
Placer	9	350	257	245	171	9	4,381 83
Plumas	3	54	46	79	52	3	924 71
Sacramento	11	430	363	416	276	11	6,451 81
San Bernardino	3	436	299	317	239	6	3,122 87

San Diego	4	205	79	118	81	4	2,372 40
San Francisco							
San Joaquin							
San Luis Obispo	1	86	60	60	41	1	758 53
San Mateo	2	106	62	64	41	2	1,488 41
Santa Barbara	1	86	22	22	15	1	570 37
Santa Clara	10	628	419	432	248	10	5,069 39
Santa Cruz	3	145	98	106	72	3	1,383 86
Shasta	5	349	257	320	235	7	5,060 87
Sierra	1	11	8	26	14	1	491 00
Siskiyou	6	252	176	183	161	6	2,578 35
Solano	7	290	226	298	182	7	4,043 60
Sonoma	13	714	581	367	513	15	6,826 08
Stanislaus	3	163	154	109	76	3	1,874 32
Sutter	3	90	83	118	71	3	1,780 90
Tehama	6	360	272	299	178	7	4,190 18
Trinity	1	69	36	43	28	1	664 14
Tulare	1	50	35	43	33	1	454 65
Tuolumne	5	325	286	315	181	5	2,145 69
Ventura	1	77	60	56	36	1	516 54
Yolo	10	319	261	314	196	10	6,179 95
Yuba	4	151	124	166	104	4	1,617 46
Totals	188	10,162	7,390	8,138	5,584	202	$110,964 79

TABLE No. 3—Continued.

COUNTIES.	FOR DISTRICTS MAINTAINING A SIX MONTHS' SCHOOL.						
	Number of districts.	Number of census children.	No. of census children enrolled in public schools.	Total number of children enrolled in public schools.	Average number belonging to public schools.	Number of teachers employed.	Current expenses.
Alameda	2	95	70	60	45	2	$1,014 70
Alpine	1	32	18	26	17	1	674 75
Amador	1	16	15	15	12	1	256 00
Butte	6	253	193	209	147	6	3,035 93
Calaveras	7	385	289	335	188	8	3,344 83
Colusa	1	38	30	31	24	1	590 11
Contra Costa	6	275	195	214	123	6	2,052 65
Del Norte	1	48	46	60	51	1	814 10
El Dorado	4	180	150	155	121	4	1,374 25
Fresno	3	104	65	70	46	3	1,567 19
Humboldt	2	50	38	62	28	2	605 85
Inyo	1	80	54	68	37	1	1,683 79
Kern	1	29	15	15	14	1	511 27
Klamath							
Lake	1	30	15	16	13	1	276 00
Lassen							
Los Angeles	4	276	162	177	97	4	1,976 49
Marin	2	70	39	37	18	2	972 24
Mariposa	4	166	102	123	109	4	1,974 44
Mendocino							
Merced	1	55	37	38	19	1	336 70
Mono	2	49	43	45		2	869 00
Monterey	1	84	64	80	53	1	590 57
Napa	5	150	126	125	89	5	1,807 25
Nevada	5	177	147	155	107	5	2,100 44
Placer	8	356	303	325	217	9	4,098 27
Plumas	2	39	24	30	22	2	869 57
Sacramento	4	111	85	116	70	4	1,742 15
San Bernardino	2	219	153	193	152	2	1,123 02

San Diego	4	181	84	89	46	4	2,465 11
San Francisco							
San Joaquin	1	22	22	22	20	1	305 00
San Luis Obiepo	3	204	75	84	59	3	1,742 32
San Mateo	6	428	239	255	199	6	3,227 41
Santa Barbara							
Santa Clara	4	252	196	208	135	5	2,314 83
Santa Cruz	4	155	97	106	70	4	1,366 89
Shasta	3	181	95	83	71	3	1,313 97
Sierra	3	64	50	57	47	3	1,109 50
Siskiyou	7	313	216	222	198	7	3,336 06
Solano	4	101	84	112	69	4	1,313 72
Sonoma	23	958	719	763	627	25	9,509 39
Stanislaus	9	373	252	255	194	9	4,290 98
Sutter	4	224	183	239	159	5	2,785 72
Tehama	1	38	20	19	17	1	221 12
Trinity							
Tulare	5	270	222	148	120	5	1,686 19
Tuolumne							
Ventura	1	31	22	27	17	1	210 82
Yolo	6	143	116	132	86	6	2,856 61
Yuba	8	443	324	357	274	10	3,807 81
Totals	173	7,748	5,499	5,958	4,222	181	$79,469 87

TABLE No. 3—Continued.

COUNTIES.	FOR DISTRICTS MAINTAINING A FIVE MONTHS' SCHOOL.						
	Number of districts.	Number of census children.	No. of census children enrolled in public schools.	Total number of children enrolled in public schools.	Average number belonging to public schools.	Number of teachers employed.	Current expenses.
Alameda	2	79	48	48	34	2	$851 95
Alpine	1	23	21	22	19	1	253 13
Amador	5	239	174	174	137	5	1,730 26
Butte	10	331	252	271	183	10	3,445 81
Calaveras	5	321	216	234	173	5	1,717 37
Colusa	5	197	155	155	114	5	2,298 35
Contra Costa	3	123	94	94	63	2	1,141 08
Del Norte	4	110	71	101	74	4	1,186 29
El Dorado	8	401	290	298	223	8	2,354 66
Fresno	3	97	78	59	37	3	1,272 80
Humboldt	1	38	26	14	13	1	330 45
Inyo							
Kern	1	81	36	40	24	1	750 78
Klamath							
Lake	2	83	49	56	44	2	611 00
Lassen	1	32	32	10	10	1	218 50
Los Angeles	7	713	304	301	221	7	3,408 56
Marin	1	28	15	18	9	1	460 79
Mariposa	1	74	31	39	20	1	349 19
Mendocino	5	181	129	127	99	5	2,279 65
Merced	3	89	70	94	50	3	1,159 50
Mono							
Monterey	4	354	249	288	246	6	2,502 81
Napa	4	314	249	251	207	6	3,518 31
Nevada	3	192	127	133	105	4	1,364 86
Placer	1	36	27	24	16	1	293 21
Plumas	1	17	12	19	17	1	383 25
Sacramento	2	56	46	40	32	2	704 57
San Bernardino	3	173	142	147	111	3	1,059 90

San Diego	1	15	10	9	6	1	356 50
San Francisco							
San Joaquin							
San Luis Obispo	3	115	75	80	48	3	1,035 28
San Mateo	1	24	14	15	14	1	308 50
Santa Barbara	1	130	55	60	35	3	1,092 25
Santa Clara	4	237	185	154	107	4	1,728 12
Santa Cruz	4	173	105	118	77	4	1,245 20
Shasta	3	156	128	110	99	3	1,114 28
Sierra	1	28	20	20	17	1	270 60
Siskiyou	9	380	260	265	218	9	3,860 58
Solano	3	87	70	91	66	3	1,260 29
Sonoma	8	271	220	230	197	8	2,452 46
Stanislaus	5	206	159	173	117	5	2,525 79
Sutter	1	15	12	16	12	1	388 75
Tehama	3	108	68	66	48	3	1,066 09
Trinity	1	22	6	8	7	1	280 11
Tulare	5	229	149	168	113	5	2,911 50
Tuolumne	3	119	91	94	70	2	962 48
Ventura							
Yolo	2	102	78	82	44	2	1,054 98
Yuba	9	345	299	305	235	9	2,875 92
Totals	153	7,144	4,942	5,121	3,811	158	$62,436 06

TABLE No. 3—Continued.

COUNTIES.	FOR DISTRICTS MAINTAINING A FOUR MONTHS' SCHOOL.						
	Number of districts.	Number of census children.	No. of census children enrolled in public schools.	Total number children enrolled in public schools.	Average number belonging to public schools.	Number of teachers employed.	Current expenses.
Alameda							
Alpine							
Amador	2	78	62	97	87	2	$552 62
Butte	8	270	191	215	174	8	2,348 05
Calaveras							
Colusa							
Contra Costa	3	119	68	85	65	3	881 08
Del Norte							
El Dorado	4	188	147	149	110	4	945 39
Fresno	1	27	14	16	14	1	150 00
Humboldt	1	52	36	30	22	1	175 00
Inyo							
Kern							
Klamath	1	33	10	10	10	1	80 00
Lake	1	18	13	13	10	1	277 00
Lassen							
Los Angeles	2	164	117	128	87	2	850 80
Marin							
Mariposa	3	140	68	62	57	3	865 92
Mendocino							
Merced							
Mono							
Monterey	3	168	116	104	75	4	1,340 17
Napa	4	129	102	142	124	4	1,227 23
Nevada	3	91	54	66	46	3	904 06
Placer	4	45	42	57	45	4	870 33
Plumas	4	59	44	55	33	4	763 86
Sacramento	1	37	31	32	30	1	514 68
San Bernardino	3	154	115	94	71	3	875 50

San Diego	2	82	28	34	24	2	656 76
San Francisco							
San Joaquin	2	43	41	57	45	2	525 00
San Luis Obispo	4	180	121	107	91	4	1,289 83
San Mateo	2	47	29	31	27	2	689 10
Santa Barbara							
Santa Clara	3	133	79	62	48	3	845 98
Santa Cruz	2	104	80	82	68	2	992 52
Shasta	2	60	46	46	39	2	644 50
Sierra							
Siskiyou	9	325	268	268	220	9	3,341 23
Solano	1	37	21	33	22	1	465 77
Sonoma	4	310	216	244	160	5	1,920 51
Stanislaus	2	77	44	39	27	2	613 56
Sutter	1	29	28	37	26	1	454 54
Tehama	4	140	94	95	65	4	1,671 40
Trinity	2	60	26	33	30	2	531 14
Tulare	3	228	140	132	87	3	1,854 29
Tuolumne	1	35	20	25	21	1	228 82
Ventura	1	31	22	27	17	1	219 82
Yolo							
Yuba	4	129	86	91	68	4	1,016 95
Totals	97	3,817	2,619	2,722	2,145	99	$31,574 27

TABLE No. 3—Continued.

COUNTIES.	FOR DISTRICTS MAINTAINING A THREE MONTHS' SCHOOL.						
	Number of districts.	Number of census children.	No. of census children enrolled in public schools.	Total number of children enrolled in public schools.	Average number belonging to public schools.	Number of teachers employed.	Current expenses.
Alameda							
Alpine	1	15	11	11	10	1	$232 50
Amador	2	56	49	40	35	2	478 75
Butte	4	78	65	74	64	4	656 05
Calaveras	4	128	92	94	69	4	695 99
Colusa	11	253	204	185	135	11	2,879 47
Contra Costa	1	27	16	13	11	1	446 29
Del Norte							
El Dorado	8	274	235	221	173	8	2,092 16
Fresno	1	30	22	27	21	1	244 20
Humboldt							
Inyo	2	57	40	52	38	2	334 35
Kern							
Klamath							
Lake	1	27	25	28	24	1	180 00
Lassen	1	22	22	14	13	1	130 33
Los Angeles	5	296	109	127	87	5	1,629 68
Marin	2	33	21	28	23	2	267 00
Mariposa	1	70	44	16	14	1	223 00
Mendocino	3	77	58	48	39	3	795 53
Merced							
Mono	1	14	5	5	5	1	180 00
Monterey	4	186	89	57	41	4	856 78
Napa	7	174	126	130	109	7	1,675 51
Nevada	1	16	13	15	13	1	152 29
Placer							
Plumas	1	21	17	18	11	1	160 00
Sacramento	3	66	57	59	45	3	695 75
San Bernardino	1	46	33	37	23	1	206 25

San Diego	1	59	24	29	23	1	344 96
San Francisco							
San Joaquin	4	50	50	117	99	4	729 20
San Luis Obispo	4	158	91	80	65	4	1,007 44
San Mateo							
Santa Barbara							
Santa Clara	1	81	59	79	61	1	388 44
Santa Cruz	2	43	26	41	27	2	279 25
Shasta	6	202	143	138	125	6	1,046 61
Sierra	1	9	5	5	5	1	250 88
Siskiyou	16	491	325	325	280	16	2,969 83
Solano	3	84	48	54	45	3	794 13
Sonoma	17	614	438	457	377	17	3,944 77
Stanislaus	5	113	94	101	83	5	1,094 03
Sutter	3	91	67	71	52	3	660 75
Tehama	1	49	36	19	15	1	522 65
Trinity	1	15	13	13	8	1	74 88
Tulare	5	176	107	130	95	5	1,652 41
Tuolumne	1	42	18	9	8	1	224 34
Ventura	3	92	67	96	60	3	754 09
Yolo							
Yuba	3	89	71	60	50	3	552 84
Totals	142	4,424	2,840	3,127	2,481	142	$32,729 38

TABLE No. 4.

Statement of financial statistics, showing the receipts, from all sources, of school revenue, for the school years ending June thirtieth, eighteen hundred and seventy-two and eighteen hundred and seventy-three.

COUNTIES.	Balance on Hand at the Beginning of School Year.	
	1872.	1873.
Alameda	$12,334 31	$8,457 72
Alpine	675 21	662 21
Amador	3,881 38	5,719 81
Butte	3,502 18	9,688 88
Calaveras	1,830 20	1,648 05
Colusa	1,057 69	4,277 80
Contra Costa	3,921 69	2,229 13
Del Norte	616 14	310 31
El Dorado	1,873 38	2,163 65
Fresno	5,121 48	3,194 40
Humboldt	1,618 14	2,968 81
Inyo	1,028 21	2,011 14
Kern	1,176 31	3,161 59
Klamath	417 87	579 66
Lake	1,352 81	1,617 44
Lassen	348 32	1,024 52
Los Angeles	12,403 04	4,665 70
Marin	8,982 93	4,018 40
Mariposa	1,235 54	3,255 60
Mendocino	5,016 28	7,825 82
Merced	865 67	3,579 81
Mono	529 22	2,131 02
Monterey	4,440 32	3,365 42
Napa	4,834 71	6,538 77
Nevada	4,025 70	4,362 40
Placer	3,513 53	4,306 94
Plumas	1,349 40	2,308 76
Sacramento	3,309 38	37,890 86
San Bernardino	2,816 39	2,743 43
San Diego	4,132 20	4,203 79
San Francisco	56,157 73	48,736 82
San Joaquin	4,499 34	9,597 96
San Luis Obispo	4,348 72	4,149 46
San Mateo	2,795 42	4,114 64
Santa Barbara	4,147 18	2,786 47
Santa Clara	9,842 04	8,939 26
Santa Cruz	4,498 00	3,049 47
Shasta	5,079 67	5,619 96
Sierra	1,030 12	2,069 52
Siskiyou	1,899 12	2,555 42
Solano	6,802 97	5,617 74
Sonoma	7,675 85	4,563 95
Stanislaus	1,905 18	1,564 55
Sutter	1,887 58	2,620 18
Tehama	6,252 63	2,809 08
Trinity	789 89	1,163 27
Tulare	2,019 55	2,262 08
Tuolumne	1,612 67	2,138 14
Ventura	.....	2,115 86
Yolo	1,492 54	6,363 97
Yuba	2,797 57	3,719 98
Totals	$225,743 40	$269,459 67

TABLE No. 4—Continued.

COUNTIES.	CASH RECEIVED FROM STATE APPORTIONMENT.	
	1872.	1873.
Alameda	$18,691 23	$19,860 92
Alpine	406 39	348 94
Amador	6,419 78	6,568 97
Butte	8,254 06	8,322 95
Calaveras	7,299 10	7,147 44
Colusa	4,968 66	4,736 20
Contra Costa	8,386 45	8,042 15
Del Norte	963 98	992 07
El Dorado	7,667 97	7,531 57
Fresno	2,589 83	2,821 66
Humboldt	5,557 89	5,987 33
Inyo	829 08	819 34
Kern	1,313 09	1,409 33
Klamath	774 93	803 32
Lake	3,065 10	3,143 62
Lassen	1,390 03	1,375 66
Los Angeles	16,493 29	18,520 92
Marin	4,577 78	4,682 20
Mariposa	2,939 10	2,847 77
Mendocino	7,582 12	7,754 29
Merced	2,863 22	2,605 92
Mono	240 91	252 81
Monterey	10,445 57	10,778 43
Napa	6,040 50	6,347 26
Nevada	13,284 77	13,132 35
Placer	7,174 83	7,033 65
Plumas	2,091 04	2,183 20
Sacramento	18,318 22	17,841 36
San Bernardino	5,201 73	5,086 37
San Diego	4,695 94	4,663 65
San Francisco	95,245 02	99,202 48
San Joaquin	16,449 10	15,800 41
San Luis Obispo	4,465 94	4,450 81
San Mateo	5,636 18	5,881 26
Santa Barbara	7,313 71	4,658 33
Santa Clara	21,148 90	20,578 83
Santa Cruz	8,856 46	8,565 79
Shasta	3,858 57	4,145 45
Sierra	3,619 62	3,288 87
Siskiyou	6,157 76	7,168 57
Solano	12,966 46	12,290 10
Sonoma	18,789 34	18,959 00
Stanislaus	4,916 52	4,728 03
Sutter	4,031 05	4,072 62
Tehama	3,145 07	3,490 14
Trinity	1,490 55	1,567 29
Tulare	4,758 26	4,811 31
Tuolumne	6,149 81	6,048 06
Ventura	.....	2,612 84
Yolo	6,930 11	6,684 39
Yuba	7,566 83	7,593 37
Totals	$424,021 85	$430,219 60

Table No. 4—Continued.

COUNTIES.	Cash Received from County Taxes.	
	1872.	1873.
Alameda	$40,083 02	$37,352 00
Alpine	1,164 04	2,007 46
Amador	9,156 49	11,924 13
Butte	20,789 82	14,542 58
Calaveras	3,050 60	9,388 84
Colusa	17,114 06	10,467 53
Contra Costa	9,068 32	11,323 12
Del Norte	1,274 99	2,901 12
El Dorado	6,179 80	8,187 56
Fresno	10,079 88	11,449 59
Humboldt	7,101 60	9,016 35
Inyo	2,612 23	4,211 00
Kern	7,030 86	6,865 82
Klamath	2,158 83	2,551 64
Lake	3,893 98	4,800 00
Lassen	1,633 35	2,197 27
Los Angeles	14,402 55	29,161 38
Marin	8,300 18	13,317 46
Mariposa	4,751 70	5,226 89
Mendocino	9,909 87	10,690 25
Merced	8,221 00	14,415 69
Mono	860 29	1,472 45
Monterey	14,401 50	18,584 04
Napa	11,319 10	15,261 40
Nevada	26,426 99	37,723 71
Placer	17,262 90	15,485 67
Plumas	6,044 74	7,252 32
Sacramento	43,395 95	49,709 31
San Bernardino	3,723 16	5,992 63
San Diego	4,683 33	9,573 94
San Francisco	440,497 76	452,050 63
San Joaquin	29,540 40	36,133 65
San Luis Obispo	6,099 48	6,879 66
San Mateo	9,685 46	14,597 90
Santa Barbara	7,480 14	7,538 11
Santa Clara	30,742 70	31,536 40
Santa Cruz	13,666 40	22,344 59
Shasta	4,076 95	7,197 12
Sierra	13,158 08	7,863 53
Siskiyou	10,649 80	21,675 13
Solano	20,381 80	44,391 50
Sonoma	21,635 97	38,357 80
Stanislaus	10,738 71	19,575 53
Sutter	6,441 00	7,000 00
Tehama	9,621 96	7,479 62
Trinity	2,615 95	4,282 44
Tulare	5,137 40	12,733 34
Tuolumne	5,634 09	8,022 00
Ventura	.....	4,230 66
Yolo	15,338 21	18,909 00
Yuba	9,396 82	14,230 80
Totals	$968,636 21	$1,179,072 45

TABLE No. 4—Continued.

COUNTIES.	CASH RECEIVED FROM CITY AND DISTRICT TAXES.	
	1872.	1873.
Alameda	$37,512 84	$35,087 68
Alpine	.....	.....
Amador	.....	.....
Butte	114 36	788 33
Calaveras	1,078 60	1,112 64
Colusa	.....	12,137 30
Contra Costa	7,632 30	17,001 11
Del Norte	93 00	259 41
El Dorado	2,384 69	3,348 50
Fresno	.....	3,000 00
Humboldt	5,975 01	13,268 41
Inyo	1,040 72	624 10
Kern	.....	.....
Klamath	.....	.....
Lake	757 73	5,596 45
Lassen	1,863 71	3,235 40
Los Angeles	2,302 53	8,152 41
Marin	1,522 08	7,686 60
Mariposa	.....	1,585 96
Mendocino	10,367 32	8,295 36
Merced	5,831 53	1,147 11
Mono	.....	180 00
Monterey	2,861 80	5,146 38
Napa	7,891 28	4,576 07
Nevada	6,794 33	5,429 33
Placer	3,389 58	6,339 34
Plumas	2,956 93	740 60
Sacramento	52,199 12	57,172 08
San Bernardino	2,991 07	.....
San Diego	.....	7,699 53
San Francisco	.....	.....
San Joaquin	30,043 88	13,844 45
San Luis Obispo	22 64	282 00
San Mateo	861 80	4,968 50
Santa Barbara	697 43	262 80
Santa Clara	22,220 35	32,700 30
Santa Cruz	1,245 00	2,061 68
Shasta	1,580 29	2,061 49
Sierra	.....	6,117 85
Siskiyou	2,837 34	2,041 75
Solano	12,874 13	16,150 47
Sonoma	12,035 73	6,531 64
Stanislaus	.....	3,174 17
Sutter	4,730 00	19,980 90
Tehama	5,902 01	6,015 47
Trinity	761 46	.....
Tulare	1,077 62	4,617 23
Tuolumne	.....	.....
Ventura	.....	10,832 02
Yolo	.....	14,041 25
Yuba	6,856 69	7,282 93
Totals	$261,306 90	$362,525 05

Table No. 4—Continued.

COUNTIES.	Cash Received from Miscellaneous Sources.	
	1872.	1873.
Alameda	$26,320 00	$40,005 61
Alpine	.....	.....
Amador	822 46	515 50
Butte	2,824 06	2,331 79
Calaveras	1,760 68	1,595 16
Colusa	.....	42 00
Contra Costa	3,811 08	2,072 46
Del Norte	12 50	.....
El Dorado	2,536 23	4,666 05
Fresno	465 27	.....
Humboldt	2,495 75	52 15
Inyo	383 89	4,160 00
Kern	.....	.....
Klamath	110 00	.....
Lake	.....	398 09
Lassen	.....	516 22
Los Angeles	278 00	925 72
Marin	1,411 69	838 00
Mariposa	839 35	263 25
Mendocino	375 50	.....
Merced	.....	40 00
Mono	103 00	.....
Monterey	850 66	117 00
Napa	2,404 49	180 00
Nevada	1,303 00	2,312 13
Placer	1,441 48	1,385 13
Plumas	2,298 09	247 00
Sacramento	3,894 90	1,201 37
San Bernardino	175 00	.....
San Diego	.....	.....
San Francisco	125,098 44	130,992 16
San Joaquin	7,789 80	89,993 68
San Luis Obispo	359 80	923 30
San Mateo	140 30	412 18
Santa Barbara	6,187 12	.....
Santa Clara	9,708 61	9,929 61
Santa Cruz	174 00	.....
Shasta	507 00	2,486 60
Sierra	804 41	405 77
Siskiyou	.....	448 25
Solano	10,130 71	2,766 53
Sonoma	3,269 92	1,267 86
Stanislaus	.....	34 00
Sutter	2,301 93	607 26
Tehama	4,568 98	210 20
Trinity	828 26	55 91
Tulare	420 00	1,087 75
Tuolumne	244 50	.....
Ventura	.....	.....
Yolo	481 69	659 09
Yuba	2,042 67	515 52
Totals	$232,075 22	$310,502 30

TABLE No. 4—Continued.

COUNTIES.	TOTAL RECEIPTS.	
	1872.	1873.
Alameda	$134,941 40	$140,763 98
Alpine	2,245 64	3,018 61
Amador	20,280 11	24,728 41
Butte	35,484 48	35,674 48
Calaveras	15,019 18	20,892 13
Colusa	23,140 41	31,660 83
Contra Costa	32,819 84	40,667 97
Del Norte	2,960 61	4,462 91
El Dorado	20,642 07	25,897 33
Fresno	18,256 46	20,465 65
Humboldt	22,748 39	31,293 05
Inyo	5,894 13	11,765 58
Kern	9,520 26	11,436 74
Klamath	3,461 63	3,934 62
Lake	9,069 62	15,555 60
Lassen	5,235 41	8,349 07
Los Angeles	45,879 41	61,426 13
Marin	24,794 66	30,542 66
Mariposa	9,765 69	13,179 47
Mendocino	33,251 09	34,565 72
Merced	17,781 42	21,788 53
Mono	1,733 42	4,036 18
Monterey	32,999 85	37,991 27
Napa	32,490 08	32,903 50
Nevada	51,834 79	62,959 92
Placer	32,782 32	34,500 73
Plumas	14,740 20	12,731 88
Sacramento	121,117 57	163,814 98
San Bernardino	14,907 35	13,822 43
San Diego	13,511 47	26,140 91
San Francisco	716,998 95	730,982 99
San Joaquin	88,322 52	165,370 15
San Luis Obispo	15,296 58	16,635 17
San Mateo	19,119 16	29,974 48
Santa Barbara	25,825 58	15,245 71
Santa Clara	93,662 60	103,684 40
Santa Cruz	28,439 86	36,021 53
Shasta	15,102 48	21,510 62
Sierra	18,612 23	19,745 54
Siskiyou	21,544 02	33,889 12
Solano	63,156 07	81,216 34
Sonoma	63,406 81	69,680 25
Stanislaus	17,560 41	29,076 28
Sutter	19,391 56	34,280 96
Tehama	29,490 65	20,004 51
Trinity	6,486 11	7,068 91
Tulare	13,412 83	25,511 71
Tuolumne	13,741 07	16,208 20
Ventura	.....	19,791 38
Yolo	24,242 55	46,657 70
Yuba	28,662 58	33,341 65
Totals	$2,131,783 58	2,551,779 07

Table No. 4—Continued.

COUNTIES.	Amount Drawn from Unapportioned County Fund to pay County Board of Examination, Postage, Binding, etc.	
	1872.	1873.
Alameda	$330 50	$439 50
Alpine	62 50	71 00
Amador	396 75	511 25
Butte	270 88	299 30
Calaveras	438 80	388 34
Colusa	377 00	375 00
Contra Costa	142 59	332 25
Del Norte	11 00	117 05
El Dorado	190 00	176 75
Fresno	355 50	386 00
Humboldt	102 50	263 75
Inyo	17 50	44 00
Kern	39 00	197 75
Klamath	.....	50 00
Lake	103 75	224 00
Lassen	.....	10 00
Los Angeles	494 85	352 10
Marin	609 25	500 10
Mariposa	103 85	277 25
Mendocino	18 00	181 00
Merced	242 50	292 10
Mono	50 00	.....
Monterey	396 75	610 00
Napa	201 50	223 25
Nevada	.....	185 00
Placer	160 00	185 00
Plumas	33 44	43 50
Sacramento	802 00	562 50
San Bernardino	164 01	206 79
San Diego	28 75	122 00
San Francisco	.....	.....
San Joaquin	.....	275 00
San Luis Obispo	161 50	120 50
San Mateo	216 95	175 00
Santa Barbara	100 00	124 75
Santa Clara	614 00	408 00
Santa Cruz	.....	200 35
Shasta	71 00	99 00
Sierra	172 00	94 00
Siskiyou	236 00	239 00
Solano	506 50	305 00
Sonoma	363 00	327 00
Stanislaus	.....	436 00
Sutter	140 75	312 50
Tehama	271 00	409 00
Trinity	58 70	9 00
Tulare	75 00	337 50
Tuolumne	204 47	304 67
Ventura	.....	22 00
Yolo	250 00	341 00
Yuba	226 80	209 87
Totals	$9,810 84	$12,375 67

Table No. 4—Continued.

COUNTIES.	Amount Drawn from Unapportioned County Fund for County Institutes.	
	1872.	1873.
Alameda	$100 00	
Alpine		
Amador	100 00	$100 00
Butte	55 50	100 00
Calaveras	100 00	100 00
Colusa		100 00
Contra Costa		60 00
Del Norte		
El Dorado	100 00	100 00
Fresno		75 00
Humboldt	15 00	50 00
Inyo		
Kern	35 00	
Klamath		
Lake		13 50
Lassen		
Los Angeles	100 00	100 00
Marin	100 00	
Mariposa		
Mendocino	23 50	100 00
Merced		53 00
Mono		
Monterey	100 00	100 00
Napa	80 00	100 00
Nevada		100 00
Placer	7 50	60 00
Plumas		
Sacramento	100 00	65 50
San Bernardino	39 25	35 00
San Diego		100 00
San Francisco		
San Joaquin		
San Luis Obispo		48 25
San Mateo		
Santa Barbara	25 00	20 00
Santa Clara	100 00	100 00
Santa Cruz		100 00
Shasta		
Sierra		
Siskiyou	100 00	100 00
Solano		50 00
Sonoma	100 00	100 00
Stanislaus		100 00
Sutter		
Tehama	100 00	100 00
Trinity		
Tulare	30 00	100 00
Tuolumne		
Ventura		
Yolo	100 00	100 00
Yuba		
Totals	$1,610 75	$2,430 25

TABLE No. 5.

Financial statistics, showing school expenditures for the school years ending June thirtieth, eighteen hundred and seventy-two and eighteen hundred and seventy-three.

COUNTIES.	Amount Paid for Teachers' Salaries.		Amount Paid for Rent, Repairs, Fuel, and Contingent Expenses	
	1872.	1873.	1872.	1873.
Alameda	$71,688 59	$80,356 51	$13,080 60	$13,876 78
Alpine	1,555 87	1,648 13	47 00	253 25
Amador	12,728 75	15,194 23	779 64	1,672 09
Butte	21,323 67	23,934 64	1,377 36	3,301 96
Calaveras	12,291 71	13,765 04	885 50	1,154 58
Colusa	15,336 41	20,184 25	2,511 51	4,478 35
Contra Costa	23,063 00	21,577 53	2,113 29	1,173 51
Del Norte	2,324 99	2,830 00	187 32	394 79
El Dorado	12,914 97	15,435 31	2,275 43	1,805 15
Fresno	12,731 17	12,917 04	1,184 18	911 13
Humboldt	14,456 00	18,386 82	1,400 88	2,070 69
Inyo	3,535 67	3,801 00	292 24	1,165 48
Kern	3,895 00	5,730 00	522 80	767 31
Klamath	1,800 00	2,429 00	83 38	600 95
Lake	6,206 98	10,716 79	861 92	1,147 56
Lassen	3,982 33	5,252 93	99 78	642 38
Los Angeles	25,848 20	30,868 87	1,586 33	4,776 90
Marin	11,722 81	14,923 40	1,263 75	2,911 27
Mariposa	5,694 74	7,869 95	304 61	489 94
Mendocino	20,228 29	22,761 62	3,004 23	2,688 45
Merced	11,537 40	11,512 98	568 89	840 88
Mono	920 00	1,365 00	17 68	19 50
Monterey	19,103 67	23,703 08	2,323 41	2,387 35
Napa	21,092 51	19,810 87	2,314 35	2,622 97
Nevada	39,200 96	40,126 52	4,164 47	6,468 69
Placer	22,717 00	23,403 10	744 57	2,439 42
Plumas	9,288 75	8,875 19	888 50	877 70
Sacramento	62,255 63	67,212 36	6,425 44	22,709 29
San Bernardino	7,764 34	8,479 70	919 20	1,124 77
San Diego	6,510 55	9,357 00	1,012 80	3,216 88
San Francisco	415,012 40	455,976 27	161,407 47	120,285 35
San Joaquin	60,121 13	62,613 55	5,808 80	5,438 73
San Luis Obispo	8,695 71	10,553 58	945 73	709 01
San Mateo	12,412 50	15,075 00	1,011 50	3,181 17
Santa Barbara	11,145 43	7,897 00	2,094 16	2,710 02
Santa Clara	53,824 05	57,681 90	10,521 41	11,204 48
Santa Cruz	19,868 21	21,251 51	3,187 01	4,440 26
Shasta	8,753 00	10,571 71	111 30	1,230 72
Sierra	12,578 00	13,911 00	1,010 48	2,097 47
Siskiyou	15,509 30	20,087 21	1,527 70	1,611 75
Solano	37,083 69	42,211 00	14,451 60	10,219 05
Sonoma	43,064 34	43,553 06	3,280 21	2,897 39
Stanislaus	12,986 80	16,557 71	1,875 77	2,084 64
Sutter	14,335 99	19,066 66	2,334 90	3,152 56
Tehama	9,706 25	9,864 90	1,364 89	3,278 50
Trinity	3,935 19	4,611 02	344 46	401 50
Tulare	8,618 23	12,382 60	449 76	1,560 28
Tuolumne	9,500 50	10,279 24	593 52	991 96
Ventura	.....	6,312 00	.....	2,016 07
Yolo	23,170 25	27,805 74	3,467 09	4,303 89
Yuba	18,818 30	21,676 91	3,922 72	2,269 94
Totals	$1,282,799 15	$1,434,366 98	$277,900 99	$275,674 71

TABLE No. 5—Continued.

COUNTIES.	AMOUNT PAID FOR SCHOOL LIBRARIES.		AMOUNT PAID FOR SCHOOL APPARATUS.	
	1872.	1873.	1872.	1873.
Alameda	$1,145 40	$1,542 16	$87 84	$153 49
Alpine	47 00	81 50	5 00	.....
Amador	380 85	296 56	72 26	53 62
Butte	488 52	519 66	316 92	233 96
Calaveras	56 20	270 36	31 59	109 10
Colusa	484 73	484 85	.....	.....
Contra Costa	755 57	565 79	30 00	202 02
Del Norte	.....	.....	.....	12 00
El Dorado	422 22	359 40	145 29	.....
Fresno	235 30	448 29	222 55	165 40
Humboldt	392 20	523 10	152 44	37 60
Inyo	.....	78 25	5 00	.....
Kern	173 41	.....	.....	15 00
Klamath	84 50	.....	30 00	.....
Lake	225 25	436 29	.....	.....
Lassen	.....	115 26	.....	22 50
Los Angeles	807 86	893 03	332 18	275 93
Marin	542 28	335 56	26 70	.....
Mariposa	168 14	185 78	11 75	7 75
Mendocino	852 73	673 01	.....	.....
Merced	.....	18 84	236 63	30 75
Mono	.....	.....	25 77	14 00
Monterey	695 42	392 40	120 92	84 62
Napa	142 84	327 06	39 75	.....
Nevada	831 77	861 07	.....	117 58
Placer	139 13	486 56	178 61	350 10
Plumas	183 93	220 83	158 88	203 58
Sacramento	876 44	665 47	332 71	113 37
San Bernardino	361 95	146 05	.....	.....
San Diego	128 52	279 34	4 00	.....
San Francisco	4,000 00	3,200 00	.....	.....
San Joaquin	2,087 84	2,144 59	591 16	42 50
San Luis Obispo	283 12	378 76	24 12	42 75
San Mateo	150 00	308 53	43 80	16 75
Santa Barbara	569 77	211 35	90 00	.....
Santa Clara	1,350 27	1,193 41	155 80	92 98
Santa Cruz	461 71	502 45	29 00	12 00
Shasta	122 91	176 60	20 00	450 53
Sierra	62 97	90 18	.....	70 63
Siskiyou	560 97	60 41	371 00	402 00
Solano	817 37	1,051 51	236 61	189 90
Sonoma	1,576 69	1,506 82	276 71	186 60
Stanislaus	503 89	350 70	.....	83 01
Sutter	98 44	130 19	26 00	351 87
Tehama	539 58	285 96	.....	82 75
Trinity	122 81	101 29	120 00	24 00
Tulare	278 91	574 95	19 50	.....
Tuolumne	524 09	377 33	69 64	60 00
Ventura	.....	133 28	.....	.....
Yolo	769 37	605 44	80 00	25 38
Yuba	341 17	344 76	.....	29 68
Totals	$25,793 54	$24,879 48	$4,720 13	$4,365 70

TABLE No. 5—Continued.

COUNTIES.	TOTAL CURRENT EXPENSES.		AMOUNT PAID FOR SITES, BUILDINGS, AND SCHOOL FURNITURE.	
	1872.	1873.	1872.	1873.
Alameda	$85,952 43	$95,928 94	$18,886 58	$40,800 04
Alpine	1,654 87	1,932 88	287 70	60 00
Amador	13,911 50	17,216 50	1,064 71	338 56
Butte	23,506 47	27,990 22	5,762 03	2,671 39
Calaveras	13,265 00	15,299 08	473 26	574 58
Colusa	18,332 65	25,147 45	409 53	734 30
Contra Costa	25,961 86	23,518 85	3,538 05	12,641 14
Del Norte	2,512 31	3,236 79	138 00	223 15
El Dorado	15,757 91	17,599 86	.....	2,112 45
Fresno	14,373 15	14,441 86	578 58	2,642 17
Humboldt	16,401 52	21,018 21	3,391 06	5,897 07
Inyo	3,832 91	5,044 73	50 00	4,380 00
Kern	4,591 21	6,512 31	1,700 00	228 41
Klamath	1,997 88	3,029 95	714 17	132 82
Lake	6,394 15	12,300 64	100 00	349 46
Lassen	4,082 11	6,033 07	.....	12 50
Los Angeles	28,574 57	36,814 73	12,063 07	17,077 75
Marin	13,565 54	18,170 23	7,215 06	6,962 16
Mariposa	6,179 24	8,553 42	75 69	2,024 98
Mendocino	24,085 25	26,123 08	923 00	1,385 55
Merced	12,342 92	12,402 05	1,571 42	1,780 11
Mono	963 45	1,398 50	.....	.....
Monterey	22,243 42	26,567 45	2,259 18	4,567 98
Napa	23,588 95	22,760 90	2,346 05	3,285 79
Nevada	44,197 20	47,573 86	3,636 78	6,548 39
Placer	23,779 31	26,679 18	4,570 88	4,344 24
Plumas	10,520 08	10,177 30	1,876 88	1,294 10
Sacramento	69,890 12	90,700 49	33,617 07	48,499 22
San Bernardino	9,045 49	9,750 52	3,168 17	840 04
San Diego	7,656 87	12,853 22	1,942 32	2,369 23
San Francisco	32,443 09	579,461 62	87,842 26	32,356 72
San Joaquin	68,608 43	70,239 37	12,534 11	78,998 94
San Luis Obispo	9,948 68	11,679 10	579 12	868 96
San Mateo	13,617 80	18,581 45	6,060 70	4,930 37
Santa Barbara	13,899 36	10,818 37	6,892 73	575 44
Santa Clara	65,851 53	70,172 77	18,956 47	11,735 76
Santa Cruz	23,545 93	26,206 22	1,840 68	2,750 42
Shasta	9,007 21	12,429 56	560 59	3,385 55
Sierra	13,651 45	16,169 28	2,907 06	425 96
Siskiyou	17,968 97	22,161 37	2,906 44	2,447 00
Solano	52,589 27	53,671 46	4,969 22	16,111 46
Sonoma	48,197 95	48,143 87	11,477 22	7,071 55
Stanislaus	15,306 46	19,676 06	.....	3,306 97
Sutter	16,795 33	22,701 28	.....	6,970 40
Tehama	11,610 72	13,512 11	15,311 92	5,031 85
Trinity	4,522 46	5,137 81	825 38	234 62
Tulare	9,366 40	14,517 23	1,997 22	6,070 81
Tuolumne	10,687 75	11,708 53	421 29	1,669 29
Ventura	.....	8,461 35	.....	9,479 40
Yolo	32,486 71	32,740 45	.....	3,341 90
Yuba	23,082 19	24,321 29	1,677 36	1,726 49
Totals	$1,591,213 81	$1,739,286 82	$290,119 01	$374,069 44

TABLE No. 5—Continued.

COUNTIES.	TOTAL EXPENDITURES.		BALANCE ON HAND AT CLOSE OF SCHOOL YEAR.	
	1872.	1873.	1872.	1873.
Alameda	$104,839 01	$136,728 98	$30,102 39	$4,035 00
Alpine	1,942 57	1,992 88	303 07	1,025 73
Amador	14,976 21	17,555 06	5,303 90	7,173 35
Butte	29,268 50	30,661 61	6,215 98	5,012 87
Calaveras	13,738 26	15,873 66	1,280 92	5,018 47
Colusa	18,742 18	25,881 75	4,398 23	5,799 08
Contra Costa	29,499 91	36,159 99	3,319 93	4,507 98
Del Norte	2,650 31	3,459 94	310 30	1,002 97
El Dorado	15,757 91	19,712 31	4,884 16	6,185 02
Fresno	14,951 73	17,084 03	3,304 73	3,381 52
Humboldt	19,792 58	26,915 28	2,495 81	4,377 77
Inyo	3,882 91	9,424 73	2,011 22	2,340 85
Kern	6,291 21	6,740 72	3,229 05	4,696 02
Klamath	2,712 05	3,162 77	749 58	771 85
Lake	7,394 15	12,650 10	1,675 47	2,905 50
Lassen	4,082 11	6,045 57	1,153 30	2,303 50
Los Angeles	40,637 64	53,892 48	5,241 77	7,533 65
Marin	20,770 60	25,132 39	4,024 06	5,410 27
Mariposa	6,254 93	10,578 40	3,510 76	2,601 07
Mendocino	25,008 25	27,508 63	8,242 74	7,057 09
Merced	13,914 34	14,182 16	3,867 08	7,606 37
Mono	963 45	1,398 50	769 97	2,637 78
Monterey	24,502 60	31,135 43	9,415 15	6,855 84
Napa	25,935 00	26,046 69	6,555 08	6,856 81
Nevada	47,833 98	54,122 25	4,000 81	8,837 67
Placer	28,350 19	31,023 42	4,432 13	3,477 31
Plumas	12,396 96	11,471 40	2,343 24	1,260 48
Sacramento	103,507 19	139,199 71	17,610 38	24,615 27
San Bernardino	12,213 66	10,590 56	2,693 69	3,231 87
San Diego	9,598 19	15,222 45	3,913 28	10,918 46
San Francisco	668,262 13	611,818 34	48,736 82	119,163 75
San Joaquin	81,142 54	149,238 31	7,179 98	16,131 84
San Luis Obispo	10,527 80	12,548 06	4,768 78	4,087 11
San Mateo	19,678 50	23,511 82	4,114 64	6,462 66
Santa Barbara	20,792 09	11,393 81	5,033 49	3,851 90
Santa Clara	84,808 00	81,908 53	8,854 60	21,775 87
Santa Cruz	25,386 61	28,956 64	3,053 25	8,064 89
Shasta	9,567 80	15,815 11	5,534 68	5,695 51
Sierra	16,558 51	16,595 24	2,053 72	3,150 30
Siskiyou	20,875 41	24,608 37	668 61	9,280 75
Solano	57,558 49	69,782 92	5,597 58	11,433 42
Sonoma	59,675 17	55,215 42	3,731 64	14,464 83
Stanislaus	15,306 46	22,983 03	2,253 95	6,093 25
Sutter	16,795 33	29,671 68	2,596 23	4,609 28
Tehama	26,922 64	18,543 96	2,568 01	1,460 55
Trinity	5,347 84	5 372 43	1,138 27	1,696 48
Tulare	11,363 62	20,588 04	2,049 21	4,923 67
Tuolumne	11,109 04	13,377 82	2,632 03	2,830 38
Ventura	.....	17,940 75	.....	1,850 63
Yolo	32,486 71	36,082 35	6,372 09	10,575 35
Yuba	24,759 55	26,047 78	3,903 03	7,293 87
Totals	$1,881,332 82	$2,113,356 25	$270,198 79	$414,333 71

TABLE No. 6.

Valuation of school property.

COUNTIES.	Valuation of Lots, School Houses, and Furniture.		Valuation of School Libraries.	
	1872.	1873.	1872.	1873.
Alameda	$368,100 00	$255,715 00	$3,615 00	$4,386 21
Alpine	915 00	1,050 00	62 00	126 50
Amador	22,464 31	20,920 30	1,289 00	1,200 90
Butte	42,699 50	49,125 00	3,307 14	3,781 84
Calaveras	17,137 00	18,882 00	1,155 51	835 70
Colusa	25,294 60	29,200 00	1,071 12	1,592 50
Contra Costa	37,503 75	30,680 00	2,730 83	3,369 00
Del Norte	4,037 50	4,887 50	125 00	125 00
El Dorado	16,885 50	20,075 00	3,385 42	3,855 50
Fresno	7,200 00	6,725 00	547 23	1,104 63
Humboldt	20,145 00	26,120 00	1,620 00	1,900 00
Inyo	1,460 00	5,290 00	51 80	130 05
Kern	6,050 00	6,320 00	291 00	453 00
Klamath	1,700 00	2,450 00	160 00	170 00
Lake	6,040 00	6,214 50	920 61	1,246 66
Lassen	4,650 00	4,650 00	446 56	578 92
Los Angeles	45,692 10	79,419 00	3,270 44	3,568 45
Marin	23,650 00	32,565 00	2,368 00	2,539 00
Mariposa	3,777 00	6,900 00	975 00	1,275 00
Mendocino	23,420 50	28,485 00	2,135 67	2,211 75
Merced	18,650 00	16,358 00	735 05	771 59
Mono	700 00	1,300 00	.....	14 00
Monterey	24,466 37	34,025 00	2,377 30	2,131 00
Napa	44,616 00	50,261 79	1,848 46	2,175 52
Nevada	74,870 00	82,983 00	4,837 00	3,846 00
Placer	24,880 00	30,270 00	2,610 00	2,885 00
Plumas	7,570 00	9,362 00	975 00	1,261 00
Sacramento	100,954 00	189,507 00	5,237 00	5,700 00
San Bernardino	13,930 00	14,491 68	1,934 50	1,984 24
San Diego	5,965 00	12,200 00	35 99	476 00
San Francisco	1,884,451 00	1,909,451 00	14,269 00	16,669 00
San Joaquin	200,000 00	198,100 00	2,000 00	2,823 73
San Luis Obispo	8,450 00	9,725 00	1,215 00	1,580 69
San Mateo	33,520 00	38,585 00	1,937 00	1,950 00
Santa Barbara	27,077 00	24,652 44	1,532 00	1,231 00
Santa Clara	153,343 00	173,075 00	4,992 00	8,090 00
Santa Cruz	37,975 00	44,425 00	2,027 00	2,121 00
Shasta	3,030 00	9,365 00	403 87	1,427 56
Sierra	9,925 00	5,215 00	1,561 25	1,246 00
Siskiyou	23,072 50	29,095 00	2,398 92	1,754 00
Solano	64,550 00	78,995 50	3,395 00	4,572 25
Sonoma	91,081 86	98,153 41	9,836 74	11,343 52
Stanislaus	17,232 00	20,177 50	898 86	1,629 65
Sutter	18,475 00	26,225 00	606 17	713 00
Tehama	19,981 42	27,400 00	880 31	1,320 00
Trinity	3,824 31	4,774 31	669 13	661 49
Tulare	11,775 00	13,155 00	1,665 00	979 24
Tuolumne	13,090 00	14,384 44	2,529 00	2,636 00
Ventura	.....	14,250 00	.....	700 00
Yolo	31,740 00	39,495 00	2,752 00	2,905 00
Yuba	37,896 36	41,292 88	2,413 00	2,208 70
Totals	$3,685,912 58	$3,896,553 25	$108,098 88	$124,256 81

TABLE No. 6—Continued.

COUNTIES.	VALUATION OF SCHOOL APPARATUS.		TOTAL VALUATION OF SCHOOL PROPERTY.	
	1872.	1873.	1872.	1873.
Alameda	$1,375 00	$1,869 00	$373,090 00	$261,970 21
Alpine	80 00	122 75	1,057 00	1,299 25
Amador	619 76	607 00	24,373 07	22,728 20
Butte	1,134 25	1,313 50	47,140 89	54,220 34
Calaveras	709 00	668 00	19,001 51	20,385 70
Colusa	.....	3,079 50	26,365 72	33,872 00
Contra Costa	300 50	1,206 00	40,535 08	35,255 00
Del Norte	136 25	148 25	4,298 75	5,160 75
El Dorado	1,814 75	1,856 50	22,085 67	25,787 00
Fresno	470 16	631 91	8,217 39	8,461 54
Humboldt	615 00	585 00	22,380 00	28,605 00
Inyo	32 60	27 60	1,544 40	5,447 65
Kern	115 00	146 00	6,456 00	6,919 00
Klamath	50 00	50 00	1,910 00	2,670 00
Lake	230 00	199 00	7,190 61	7,660 16
Lassen	140 00	140 00	5,236 56	5,368 92
Los Angeles	477 50	749 00	49,440 04	83,736 45
Marin	723 00	908 00	26,741 00	36,102 00
Mariposa	475 00	455 00	5,227 00	8,630 00
Mendocino	645 00	638 98	26,201 17	31,335 75
Merced	545 00	379 25	19,930 05	17,506 84
Mono	.....	.....	700 00	1,314 00
Monterey	682 02	5 00	27,525 69	36,161 00
Napa	596 50	796 50	47,060 96	53,233 81
Nevada	2,016 00	1,993 00	81,723 00	88,822 00
Placer	1,235 00	1,315 00	28,725 00	34,470 00
Plumas	315 00	549 00	8,860 00	11,172 00
Sacramento	1,895 00	1,940 00	108,086 00	197,147 00
San Bernardino	69 50	114 50	15,934 00	16,590 42
San Diego	55 50	.....	6,056 49	12,676 00
San Francisco	.....	.....	1,898,720 00	1,926,120 00
San Joaquin	.....	.....	202,000 00	200,923 73
San Luis Obispo	500 00	575 00	10,165 00	11,880 69
San Mateo	986 00	896 00	36,443 00	41,431 00
Santa Barbara	587 00	480 00	29,196 00	26,363 44
Santa Clara	805 00	1,875 00	159,140 00	183,040 00
Santa Cruz	800 00	626 00	40,802 00	47,172 00
Shasta	75 00	645 00	3,508 87	11,437 56
Sierra	564 83	503 00	12,051 08	6,964 00
Siskiyou	540 00	1,358 00	26,011 42	32,207 00
Solano	1,385 00	1,218 25	69,330 00	84,786 00
Sonoma	1,005 00	1,191 60	101,923 60	110,688 53
Stanislaus	429 63	572 75	18,560 49	22,379 90
Sutter	311 94	570 87	19,393 11	27,508 87
Tehama	185 00	612 00	21,046 73	29,332 00
Trinity	124 00	164 00	4,617 44	5,599 80
Tulare	185 00	205 00	13,625 00	14,339 24
Tuolumne	987 00	927 00	16,606 00	17,947 44
Ventura	.....	135 00	.....	15,085 00
Yolo	343 00	291 00	34,835 00	42,691 00
Yuba	1,286 00	1,256 68	41,595 36	44,758 26
Totals	$28,651 69	$36,605 39	$3,822,663 15	$4,057,415 45

TABLE No. 7.

Miscellaneous school statistics.

COUNTIES.	Number of First Grade Schools.		Number of Second Grade Schools.	
	1872.	1873.	1872.	1873.
Alameda	27	24	23	31
Alpine	.....	2	4	1
Amador	6	8	12	14
Butte	14	8	11	24
Calaveras	5	12	14	14
Colusa	1	1	7	13
Contra Costa	16	17	15	13
Del Norte	1	1	3	3
El Dorado	7	6	19	16
Fresno	5	1	12	10
Humboldt	4	7	4	13
Inyo	.....	3	1	3
Kern	1	1	4	7
Klamath	.....	1	.....	1
Lake	3	7	2	8
Lassen	.....	2	.....	3
Los Angeles	7	20	27	20
Marin	6	6	10	7
Mariposa	2	2	4	13
Mendocino	4	3	18	11
Merced	4	7	7	13
Mono	.....	.....	4	.....
Monterey	4	16	17	22
Napa	11	10	15	12
Nevada	2	21	12	20
Placer	.....	7	35	22
Plumas	2	9	10	8
Sacramento	38	39	36	29
San Bernardino	2	3	15	16
San Diego	1	3	10	12
San Francisco	17	14	20	22
San Joaquin	22	42	27	48
San Luis Obispo	1	1	8	13
San Mateo	3	4	2	16
Santa Barbara	1	2	11	7
Santa Clara	19	19	36	36
Santa Cruz	4	6	12	10
Shasta	3	8	4	10
Sierra	3	9	6	10
Siskiyou	14	18	13	25
Solano	18	25	12	23
Sonoma	9	18	42	48
Stanislaus	6	9	16	21
Sutter	6	5	15	20
Tehama	2	3	6	9
Trinity	1	1	7	4
Tulare	3	1	4	7
Tuolumne	3	3	13	12
Ventura	.....	.....	.....	.....
Yolo	7	19	21	25
Yuba	3	11	17	16
Totals	318	465	643	761

TABLE No. 7—Continued.

COUNTIES.	NUMBER OF THIRD GRADE SCHOOLS.		TOTAL NUMBER OF SCHOOLS.	
	1872.	1873.	1872.	1873.
Alameda	14	48	64	103
Alpine	.....	1	4	4
Amador	10	14	28	36
Butte	25	22	50	54
Calaveras	11	10	30	36
Colusa	25	27	33	41
Contra Costa	10	12	41	42
Del Norte	3	5	7	9
El Dorado	14	20	40	42
Fresno	2	12	19	23
Humboldt	21	20	29	40
Inyo	5	.....	6	6
Kern	2	2	7	10
Klamath	4	3	4	5
Lake	16	5	21	20
Lassen	9	6	9	11
Los Angeles	24	13	58	53
Marin	7	15	23	28
Mariposa	9	3	15	18
Mendocino	19	28	41	42
Merced	10	1	21	21
Mono	.....	4	4	4
Monterey	13	17	34	55
Napa	10	16	36	38
Nevada	38	19	52	60
Placer	12	19	47	48
Plumas	7	6	19	23
Sacramento	22	11	96	79
San Bernardino	4	2	21	21
San Diego	6	5	17	20
San Francisco	20	17	57	53
San Joaquin	23	7	72	97
San Luis Obispo	8	10	17	24
San Mateo	15	7	20	27
Santa Barbara	9	.....	21	9
Santa Clara	37	35	92	90
Santa Cruz	28	29	44	45
Shasta	20	10	27	28
Sierra	17	6	26	25
Siskiyou	25	11	52	54
Solano	13	20	43	68
Sonoma	29	36	80	102
Stanislaus	12	9	32	39
Sutter	14	11	35	36
Tehama	10	12	18	24
Trinity	1	5	9	10
Tulare	24	26	31	34
Tuolumne	4	4	20	19
Ventura	.....	.....	.....	.....
Yolo	13	4	41	48
Yuba	21	17	41	44
Totals	693	642	1,654	1,868

TABLE No. 7—Continued.

COUNTIES.	TOTAL NUMBER OF SCHOOL DISTRICTS.		NUMBER OF NEW DISTRICTS ORGANIZED.	
	1872.	1873.	1872.	1873.
Alameda	36	37	1	2
Alpine	4	4	.....	.....
Amador	28	28	.....	.....
Butte	43	56	2	2
Calaveras	30	31	2	1
Colusa	35	38	5	3
Contra Costa	35	35	.....	.....
Del Norte	6	7	.....	1
El Dorado	39	39	1	.....
Fresno	19	21	4	4
Humboldt	24	27	3	3
Inyo	6	7	.....	1
Kern	7	8	2	1
Klamath	5	5	2	.....
Lake	21	21	4	.....
Lassen	9	10	2	1
Los Angeles	37	38	4	2
Marin	23	25	.....	2
Mariposa	13	14	.....	1
Mendocino	36	40	3	4
Merced	18	19	2	1
Mono	4	4	.....	.....
Monterey	35	39	7	5
Napa	35	39	10	3
Nevada	39	40	3	.....
Placer	42	43	3	1
Plumas	20	23	4	4
Sacramento	55	56	3	1
San Bernardino	20	19	1	.....
San Diego	16	17	.....	2
San Francisco	12	12	.....	.....
San Joaquin	69	70	1	4
San Luis Obispo	18	20	1	5
San Mateo	21	21	2	.....
Santa Barbara	17	7	.....	1
Santa Clara	52	52	.....	.....
Santa Cruz	25	27	1	2
Shasta	24	26	2	.....
Sierra	24	23	1	.....
Siskiyou	52	53	5	5
Solano	40	41	1	1
Sonoma	87	87	3	.....
Stanislaus	33	36	1	3
Sutter	35	35	.....	.....
Tehama	18	19	2	3
Trinity	8	9	1	.....
Tulare	27	29	2	3
Tuolumne	18	19	1	2
Ventura	.....	11	.....	1
Yolo	41	41	1	.....
Yuba	34	34	3	.....
Totals	1,395	1,462	96	75

Table No. 7—Continued.

COUNTIES.	Number of Trustees Appointed by County Superintendent.		Number of New School Houses Erected.	
	1872.	1873.	1872.	1873.
Alameda	.....	24	5	4
Alpine	7	4	.....	.....
Amador	6	8	1	1
Butte	12	21	4	2
Calaveras	12	22	1	3
Colusa	21	27	5	3
Contra Costa	15	21	1	2
Del Norte	1	.....	2	1
El Dorado	15	15	3	1
Fresno	21	33	1	1
Humboldt	20	15	3	6
Inyo	13	7	1	3
Kern	4	10	2	3
Klamath	4	6	2	.....
Lake	15	16	3	1
Lassen	6	7	2	.....
Los Angeles	35	17	15	6
Marin	12	12	2	4
Mariposa	5	14	.....	1
Mendocino	.....	16	1	8
Merced	10	.....	2	2
Mono	.....	2	.....	1
Monterey	23	42	7	3
Napa	52	24	1	3
Nevada	18	12	4	5
Placer	24	29	5	2
Plumas	12	32	2	2
Sacramento	19	17	3	3
San Bernardino	11	6	2	.....
San Diego	23	16	.....	2
San Francisco	.....	.....	2	.....
San Joaquin	60	110	5	10
San Luis Obispo	13	16	1	5
San Mateo	12	15	3	2
Santa Barbara	9	6	1	1
Santa Clara	11	10	4	3
Santa Cruz	19	19	2	2
Shasta	10	13	3	4
Sierra	8	11	.....	.....
Siskiyou	30	25	1	5
Solano	12	21	2	1
Sonoma	102	46	6	3
Stanislaus	27	24	.....	6
Sutter	17	11	1	2
Tehama	10	17	5	3
Trinity	5	7	1	.....
Tulare	32	35	1	3
Tuolumne	6	14	1	.....
Ventura	.....	6	.....	.....
Yolo	23	18	2	2
Yuba	48	27	3	1
Totals	870	926	124	126

TABLE No. 7—Continued.

COUNTIES.	NUMBER OF MALE TEACHERS.		NUMBER OF FEMALE TEACHERS.	
	1872.	1873.	1872.	1873.
Alameda	25	22	73	81
Alpine	2	1	3	4
Amador	14	15	16	21
Butte	31	30	25	26
Calaveras	20	16	13	20
Colusa	25	28	8	13
Contra Costa	14	14	27	28
Del Norte	3	3	5	6
El Dorado	11	18	18	24
Fresno	12	15	5	8
Humboldt	15	15	18	25
Inyo	4	5	1	.....
Kern	3	3	3	7
Klamath	2	4	2	2
Lake	9	11	14	9
Lassen	4	5	6	6
Los Angeles	28	33	29	20
Marin	8	9	17	19
Mariposa	6	10	9	8
Mendocino	22	20	19	22
Merced	5	9	16	12
Mono	1	.....	2	4
Monterey	18	27	32	28
Napa	21	14	23	31
Nevada	30	30	22	30
Placer	17	15	45	33
Plumas	9	6	18	17
Sacramento	35	20	76	59
San Bernardino	17	13	10	8
San Diego	5	9	9	11
San Francisco	72	78	408	428
San Joaquin	45	51	67	46
San Luis Obispo	12	10	5	6
San Mateo	7	12	18	15
Santa Barbara	9	2	14	11
Santa Clara	30	28	64	62
Santa Cruz	13	11	33	34
Shasta	12	10	13	14
Sierra	9	13	16	12
Siskiyou	28	31	12	23
Solano	47	32	40	36
Sonoma	50	50	55	52
Stanislaus	28	28	9	8
Sutter	17	19	15	17
Tehama	10	10	16	14
Trinity	4	6	5	4
Tulare	12	20	13	14
Tuolumne	10	10	12	14
Ventura	.....	4	.....	7
Yolo	32	21	14	27
Yuba	18	16	27	28
Totals	881	882	1,420	1,454

TABLE No. 7—Continued.

COUNTIES.	TOTAL NUMBER OF TEACHERS.		AVERAGE MONTHLY WAGES PAID TO MALE TEACHERS.	
	1872.	1873.	1872.	1873.
Alameda	98	103	$97 25	$110 25
Alpine	5	5	65 83	100 00
Amador	30	36	75 23	82 50
Butte	56	56	82 00	74 00
Calaveras	33	36	70 75	72 00
Colusa	33	41	75 41	78 58
Contra Costa	41	42	89 00	92 00
Del Norte	8	9	71 00	73 33
El Dorado	29	42	72 00	72 50
Fresno	17	23	95 00	96 00
Humboldt	33	40	72 25	73 56
Inyo	5	5	98 00	106 60
Kern	6	10	100 00	100 00
Klamath	4	6	65 00	63 50
Lake	23	20	77 00	83 20
Lassen	10	11	75 00	67 00
Los Angeles	57	53	83 33	84 00
Marin	25	28	80 00	85 00
Mariposa	15	18	89 41	81 00
Mendocino	41	42	72 50	73 75
Merced	21	21	85 00	85 00
Mono	3	4	70 00	.....
Monterey	50	55	90 00	90 00
Napa	44	45	77 00	79 33
Nevada	52	60	88 00	93 00
Placer	62	48	85 00	84 00
Plumas	27	23	74 75	81 00
Sacramento	111	79	88 00	81 12
San Bernardino	27	21	69 00	66 00
San Diego	14	20	63 00	83 40
San Francisco	480	506	168 00	168 00
San Joaquin	112	97	75 00	71 00
San Luis Obispo	17	16	82 00	85 00
San Mateo	25	27	71 00	76 67
Santa Barbara	23	13	70 00	105 00
Santa Clara	94	90	90 00	90 00
Santa Cruz	46	45	75 00	85 00
Shasta	25	24	74 00	82 00
Sierra	25	25	82 80	80 54
Siskiyou	40	54	72 00	70 00
Solano	87	68	86 00	89 40
Sonoma	105	102	77 00	77 00
Stanislaus	37	36	74 00	74 08
Sutter	32	36	71 40	83 00
Tehama	26	24	86 11	85 50
Trinity	9	10	80 00	75 00
Tulare	25	34	75 00	75 00
Tuolumne	22	24	80 00	77 00
Ventura	.....	11	.....	79 00
Yolo	46	48	78 00	84 00
Yuba	45	44	80 00	88 00
Totals	2,301	2,336	$80 82	$84 28

TABLE No. 7—Continued.

COUNTIES.	NUMBER OF CERTIFICATES GRANTED TO MALE TEACHERS.		NUMBER OF CERTIFICATES GRANTED TO FEMALE TEACHERS.	
	1872.	1873.	1872.	1873.
Alameda	6	.....	14	22
Alpine	.....	1	3	4
Amador	6	6	6	15
Butte	7	14	17	15
Calaveras	5	4	10	11
Colusa	11	13	8	7
Contra Costa	3	3	6	11
Del Norte	.....	.....	3	1
El Dorado	4	4	10	3
Fresno	5	4	2	12
Humboldt	7	8	15	18
Inyo	1	2	.....	.....
Kern	1	4	1	5
Klamath	.....	2	.....	1
Lake	.....	5	3	9
Lassen	3	4	4	2
Los Angeles	9	13	7	11
Marin	2	5	12	17
Mariposa	.....	2	2	.....
Mendocino	10	6	3	12
Merced	4	3	4	11
Mono	.....	.....	.....	3
Monterey	.....	12	.....	7
Napa	12	5	13	12
Nevada	10	8	26	16
Placer	4	7	8	13
Plumas	2	1	8	3
Sacramento	9	10	31	33
San Bernardino	3	6	4	1
San Diego	5	7	11	5
San Francisco	.....	.....	.....	.....
San Joaquin	10	15	19	19
San Luis Obispo	5	4	4	3
San Mateo	2	4	13	6
Santa Barbara	2	.....	7	7
Santa Clara	15	11	53	25
Santa Cruz	9	5	19	15
Shasta	3	3	4	8
Sierra	6	10	12	9
Siskiyou	11	10	13	7
Solano	7	5	18	21
Sonoma	26	25	30	40
Stanislaus	7	7	5	6
Sutter	3	5	5	5
Tehama	6	4	8	9
Trinity	3	2	4	3
Tulare	6	4	13	6
Tuolumne	5	6	5	14
Ventura	.....	1	.....	4
Yolo	9	13	14	6
Yuba	7	8	18	16
Totals	271	201	495	509

TABLE No. 7—Continued.

COUNTIES.	NUMBER OF APPLICANTS REJECTED.		NUMBER OF CERTIFICATES RENEWED.	
	1872.	1873.	1872.	1873.
Alameda	6	53	6	4
Alpine	.....	.....	.....	.....
Amador	2	3	7	6
Butte	4	5	8	9
Calaveras	6	2	3	1
Colusa	13	7	.....	.....
Contra Costa	6	9	6	5
Del Norte	2	1	1	5
El Dorado	18	8	.....	1
Fresno	.....	.....	2	5
Humboldt	6	8	4	6
Inyo	.....	2	1	.....
Kern	2	4	1	1
Klamath	.....	1	.....	1
Lake	1	4	7	3
Lassen	.....	1	1	2
Los Angeles	6	6	1	2
Marin	11	21	1	.....
Mariposa	.....	3	1	.....
Mendocino	7	2	8	1
Merced	5	.....	1	7
Mono	.....	7	.....	1
Monterey	1	20	2	6
Napa	3	8	4	3
Nevada	32	28	2	2
Placer	9	11	1	4
Plumas	.....	1	1	.....
Sacramento	22	28	6	4
San Bernardino	1	.....	2	5
San Diego	.....	5	1	.....
San Francisco	.....	.....	.....	.....
San Joaquin	30	37	8	.....
San Luis Obispo	6	5	2	2
San Mateo	1	1	.....	7
Santa Barbara	2	4	2	.....
Santa Clara	41	28	3	5
Santa Cruz	2	14	17	14
Shasta	12	7	2	3
Sierra	.....	.....	.....	5
Siskiyou	4	5	6	10
Solano	8	13	3	9
Sonoma	31	28	25	.....
Stanislaus	5	5	4	2
Sutter	.....	7	.....	2
Tehama	3	3	3	.....
Trinity	1	1	2	2
Tulare	4	3	1	.....
Tuolumne	5	10	.....	1
Ventura	.....	1	.....	.....
Yolo	18	6	10	10
Yuba	10	11	2	4
Totals	346	337	168	160

TABLE No. 8.

Statement, by counties, of apportionment of Public School Fund for school years ending June thirtieth, eighteen hundred and seventy-two and eighteen hundred and seventy-three.

COUNTIES.	SEMI-ANNUAL.		Total for 1872.
	August, 1871.	February, 1872.	
Alameda	$6,137 60	$12,553 63	$18,691 23
Alpine	137 76	268 63	406 39
Amador	2,093 28	4,326 50	6,419 78
Butte	2,562 56	5,691 50	8,254 06
Calaveras	2,409 12	4,889 98	7,299 10
Colusa	1,487 36	3,481 30	4,968 66
Contra Costa	2,791 04	5,595 41	8,386 45
Del Norte	295 68	668 30	963 98
El Dorado	2,574 88	5,093 09	7,667 97
Fresno	814 24	1,775 59	2,589 83
Humboldt	1,687 84	3,870 05	5,557 89
Inyo	272 16	556 92	829 08
Kern	413 28	899 81	1,313 09
Klamath	246 40	528 53	774 93
Lake	955 36	2,109 74	3,065 10
Lassen	477 12	912 91	1,390 03
Los Angeles	5,274 08	11,219 21	16,493 29
Marin	1,489 60	3,088 18	4,577 78
Mariposa	894 88	2,044 22	2,939 10
Mendocino	2,373 28	5,208 84	7,582 12
Merced	829 92	2,033 30	2,863 22
Mono	70 56	170 35	240 91
Monterey	3,299 52	7,146 05	10,445 57
Napa	1,991 36	4,049 14	6,040 50
Nevada	4,391 52	8,893 25	13,284 77
Placer	2,418 08	4,756 75	7,174 83
Plumas	649 60	1,441 44	2,091 04
Sacramento	6,111 84	12,206 38	18,318 22
San Bernardino	1,637 44	3,564 29	5,201 73
San Diego	1,236 48	3,459 46	4,695 94
San Francisco	30,301 60	64,943 42	95,245 02
San Joaquin	5,253 92	11,195 18	16,449 10
San Luis Obispo	1,428 00	3,037 94	4,465 94
San Mateo	1,849 12	3,787 06	5,636 18
Santa Barbara	2,382 24	4,931 47	7,313 71
Santa Clara	6,863 36	14,285 54	21,148 90
Santa Cruz	2,983 68	5,872 78	8,856 46
Shasta	1,200 64	2,657 93	3,858 57
Sierra	1,252 16	2,367 46	3,619 62
Siskiyou	1,789 76	4,368 00	6,157 76
Solano	4,151 84	8,814 62	12,966 46
Sonoma	6,174 56	12,614 78	18,789 34
Stanislaus	1,760 64	3,155 88	4,916 52
Sutter	1,373 12	2,657 93	4,031 05
Tehama	965 44	2,179 63	3,145 07
Trinity	479 36	1,011 19	1,490 55
Tulare	1,458 24	3,300 02	4,758 26
Tuolumne	2,039 52	4,110 29	6,149 81
Yolo	2,326 24	4,603 87	6,930 11
Yuba	2,460 64	5,106 19	7,566 83
Totals	$136,517 92	$287,503 93	$424,021 85

TABLE No. 8—Continued.

COUNTIES.	SEMI-ANNUAL.		Total for 1873.
	August, 1872.	February, 1873.	
Alameda	$6,150 36	$13,706 56	$19,856 92
Alpine	131 61	217 33	348 94
Amador	2,119 67	4,424 67	6,544 34
Butte	2,788 42	5,534 53	8,322 95
Calaveras	2,395 73	4,751 72	7,147 45
Colusa	1,705 58	3,445 63	5,151 21
Contra Costa	2,741 34	5,249 68	8,091 02
Del Norte	327 42	664 65	992 07
El Dorado	2,495 24	5,053 45	7,548 69
Fresno	869 91	1,951 75	2,821 66
Humboldt	1,896 04	4,091 29	5,987 33
Inyo	272 85	546 49	819 34
Kern	440 84	968 49	1,409 33
Klamath	258 94	544 38	803 32
Lake	1,033 62	2,110 00	3,143 62
Lassen	447 26	928 40	1,375 66
Los Angeles	5,496 59	13,025 03	18,521 62
Marin	1,512 98	3,169 22	4,682 20
Mariposa	1,001 52	1,846 25	2,847 77
Mendocino	2,551 95	5,211 70	7,763 65
Merced	996 17	1,915 88	2,912 05
Mono	83 46	183 57	267 03
Monterey	3,501 04	7,277 39	10,778 43
Napa	1,983 78	4,363 48	6,347 26
Nevada	4,357 04	8,817 69	13,174 73
Placer	2,330 46	4,703 19	7,033 65
Plumas	706 20	1,477 00	2,183 20
Sacramento	5,980 23	11,862 42	17,842 65
San Bernardino	1,746 24	3,340 13	5,086 37
San Diego	1,694 88	2,968 67	4,663 65
San Francisco	31,817 52	67,384 96	99,202 48
San Joaquin	5,484 82	10,294 69	15,779 51
San Luis Obispo	1,488 37	2,962 44	4,450 81
San Mateo	1,855 38	4,025 88	5,881 26
Santa Barbara	2,416 06	4,855 11	7,271 17
Santa Clara	6,998 87	13,579 96	20,578 83
Santa Cruz	2,877 23	5,688 56	8,565 79
Shasta	1,302 19	2,694 47	3,996 66
Sierra	1,159 88	2,128 99	3,288 87
Siskiyou	2,140 00	4,747 50	6,887 50
Solano	4,318 52	7,971 58	12,290 10
Sonoma	6,180 32	12,927 97	19,108 29
Stanislaus	1,546 15	3,181 88	4,728 03
Sutter	1,302 19	2,770 43	4,072 62
Tehama	1,067 86	2,422 28	3,490 14
Trinity	495 41	1,071 88	1,567 29
Tulare	1,616 77	3,194 54	4,811 31
Tuolumne	2,013 74	4,034 32	6,048 06
Yolo	2,255 56	4,433 11	6,688 67
Yuba	2,501 66	5,089 32	7,590 98
Totals	$140,855 87	$290,920 50	$431,776 37

TABLE No. 9.

Statistical table by years, showing the total expenditures for public schools in the State of California, from eighteen hundred and fifty-two to eighteen hundred and seventy-three, the assessable property of the State, and the percentage of expenditures on taxable property.

YEARS.	Total assessable property.	YEARS.	Total expenditures.	Rate per each $100.
1851	$49,231,000 00	1852	$33,449 00	.0679
1852	64,579,000 00	1853	65,645 00	.1016
1853	95,335,000 00	1854	275,606 00	.2890
1854	111,191,000 00	1855	334,638 00	.3009
1855	103,887,000 00	1856	305,221 00	.2938
1856	95,007,000 00	1857	307,832 00	.3240
1857	126,059,000 00	1858	339,914 00	.2696
1858	123,955,000 00	1859	427,093 00	.3444
1859	131,060,000 00	1860	474,263 00	.3618
1860	148,193,000 00	1861	470,113 00	.3172
1861	147,811,000 00	1862	441,228 00	.2985
1862	160,369,000 00	1863	483,407 00	.3014
1863	174,104,000 00	1864	655,196 00	.3763
1864	180,484,000 00	1865	883,116 00	.4893
1865	183,509,000 00	1866	859,229 00	.4680
1866	200,000,000 00	1867	1,163,348 00	.5816
1867	218,949,636 00	1868	1,151,497 00	.5255
1868	238,210,666 00	1869	1,290,585 00	.5418
1869	260,563,886 00	1870	1,529,047 00	.5868
1870	277,538,135 00	1871	1,713,431 00	.6572
1871	268,709,133 00	1872	1,881,333 00	.7001
1872	636,378,144 00	1873	2,113,356 00	.3321

TABLE No. 10.

Statement by years, showing the total amount of receipts and expenditures for public schools of the State of California, from eighteen hundred and fifty-two to eighteen hundred and seventy-three, inclusive.

YEARS.	Total amount of the State School Fund apportioned.	Total amount raised by county and city taxes.	Total amount raised by rate bills and subscription.
1852	.....	.....	$2,417 00
1853	.....	.....	10,626 00
1854	$52,961 00	$157,702 00	42,557 00
1855	63,662 00	119,128 00	39,895 00
1856	69,961 00	121,639 00	28,619 00
1857	78,057 00	148,989 00	55,035 00
1858	53,405 00	162,870 00	85,107 00
1859	72,319 00	205,196 00	97,584 00
1860	81,118 00	230,514 00	122,858 00
1861	81,461 00	241,861 00	114,397 00
1862	75,412 00	294,828 00	141,806 00
1863	145,537 00	328,554 00	68,209 00
1864	132,217 00	260,842 00	84,084 00
1865	168,828 00	390,306 00	91,181 00
1866	132,410 00	470,668 00	79,600 00
1867	268,910 00	595,718 00	81,966 00
1868	252,608 00	654,738 00	73,986 00
1869	290,796 00	847,229 00	66,531 00
1870	360,447 00	839,756 00	63,441 00
1871	423,858 00	923,809 00	46,660 00
1872	424,022 00	1,249,943 00	232,075 00
1873	430,220 00	1,541,597 00	310,502 00
Totals	$3,658,199 00	$9,795,887 00	$1,938,586 00

TABLE No. 10—Continued.

YEARS.	Total amount paid for teachers' salaries.	Total amount paid for school houses and sites.	Total amount expended for school purposes.
1852	$20,707 00	$9,775 00	$33,449 00
1853	47,894 00	6,193 00	65,645 00
1854	85,860 00	129,677 00	275,606 00
1855	181,906 00	76,525 00	334,638 00
1856	200,941 00	52,484 00	305,221 00
1857	192,613 00	59,743 00	307,832 00
1858	204,545 00	88,199 00	339,914 00
1859	256,777 00	90,266 00	427,003 00
1860	311,165 00	110,352 00	474,263 00
1861	311,501 00	101,818 00	470,113 00
1862	330,249 00	49,274 00	441,238 00
1863	328,338 00	93,931 00	483,407 00
1864	411,101 00	167,393 00	656,198 00
1865	526,585 00	257,804 00	883,116 00
1866	551,462 00	185,056 00	859,229 00
1867	696,116 00	238,010 00	1,163,348 00
1868	763,639 00	221,118 00	1,151,407 00
1869	873,814 00	205,766 00	1,290,585 00
1870	976,938 00	339,362 00	1,529,047 00
1871	1,103,125 00	390,158 00	1,713,431 00
1872	1,282,799 00	290,119 00	1,881,333 00
1873	1,434,367 00	374,069 00	2,113,356 00
Totals	$11,092,536 00	$3,337,082 00	$17,198,379 00

TABLE No. 11.

Statistical summary, by years, of the public schools of California, from returns of School Census Marshals and Teachers, from eighteen hundred and fifty-one to eighteen hundred and seventy-three, inclusive.

YEARS.	Number of children listed by Census Marshals.	No. of children enrolled on School Register.	Average daily attendance.	Number of schools.
1851	* 5,906	1,846	.....	49
1852	* 17,821	3,314	.....	20
1853	* 19,442	4,193	2,020	111
1854	* 20,075	9,746	4,635	168
1855	* 26,077	.....	6,442	227
1856	* 30,039	.....	8,495	321
1857	* 35,722	17,232	9,717	368
1858	* 40,530	19,822	11,183	432
1859	* 48,676	23,519	13,364	523
1860	* 57,917	26,993	14,754	593
1861	* 68,395	31,786	17,804	684
1862	* 71,821	36,566	19,262	715
1863	* 78,055	36,540	19,992	754
1864	* 86,031	47,588	24,794	832
1865	* 95,067	50,089	29,592	947
1866	† 84,179	50,273	.....	913
1867	† 94,213	62,227	.....	1,083
1868	† 104,118	‡ 65,828	‡ 43,681	1,228
1869	† 112,743	‡ 73,754	‡ 49,802	1,354
1870	† 121,751	‡ 85,808	‡ 54,271	1,492
1871	† 130,116	‡ 91,332	‡ 64,286	1,550
1872	† 137,351	‡ 94,720	‡ 65,700	1,654
1873	† 141,610	‡ 107,593	‡ 69,461	1,868

* Between four and fifteen years of age.
† Between five and fifteen years of age.
‡ Including children over fifteen years of age.

TABLE No. 11—Continued.

YEARS.	Number of teachers.	Number children under four years of age.	No. of children under eighteen years of age.	Number pupils in private schools.
1851	.....	.....	.....	.....
1852	.....	.....	.....	.....
1853	.....	.....	.....	.....
1854	214	.....	.....	.....
1855	301	.....	.....	.....
1856	392	.....	.....	.....
1857	486	.....	.....	.....
1858	517	23,558	64,088	.....
1859	744	28,300	76,976	.....
1860	831	30,932	88,849	5,438
1861	932	35,334	103,729	6,306
1862	962	38,127	110,948	6,886
1863	919	39,081	117,436	9,158
1864	1,079	41,323	128,154	11,359
1865	1,155	42,733	137,800	12,478
1866	1,268	52,037 ‡	136,216 ‖	15,671
1867	1,389	52,975 ‡	147,008 ‖	14,026
1868	1,590	58,119 ‡	162,237 ‖	14,820
1869	1,687	57,983 ‡	170,726 ‖	16,273
1870	1,869	62,940 ‡	184,691 ‖	16,198
1871	2,052	66,292 ‡	196,408 ‖	15,524
1872	2,301	69,723 ‡	207,074 ‖	13,787
1873	2,336	70,086 ‡	211,696 ‖	12,507

‡ Under five years of age.
‖ Under fifteen years of age.

TABLE No. 12.

Condition of the School Fund for the twenty-third and twenty-fourth fiscal years.

Dr.	SCHOOL FUND.				Cr.
June 30th, 1872.....	To warrants issued to County Treasurers on orders of Superintendent of Public Instruction.....	$420,041 34	July 1st, 1871.....	By balance	$93,322 62
	To California Teacher.....	4,200 00	June 30th, 1872...	By interest on bonds	79,345 00
	To certificates of transfer of land location.....	104 00		By receipts from County Treasurers.....	350,194 61
	To balance.....	98,516 89			
		$522,862 23			$522,862 23
June 30th, 1873.....	To warrants issued to County Treasurers	$422,164 29	July 1st, 1872.....	By balance	$98,516 89
	To California Teacher.....	4,200 00	June 30th, 1873...	By receipts from County Treasurers.....	336,050 24
	To binding books in office of Superintendent of Public Instruction.....	82 15		By interest on bonds	81,795 00
	To balance.....	89,915 69			
		$516,362 13			$516,362 13

TABLE No. 12—Continued.

DR.	STATE SCHOOL LAND FUND.				CR.
July 1st, 1871.....	o balance.....	$13 90	June 30th, 1872...	By receipts.....	$99,801 63
June 30th, 1872.....	o warrants issued.....	8,288 61		By warrants canceled under Act of February 20th, 1872.....	96 97
	To certificates of transfer.....	447 90			
	To balance.....	91,148 19			
		$99,898 60			$99,898 60
June 30th, 1873.....	To warrants issued.....	$13,927 08	July 1st, 1872.....	By balance.....	$91,148 19
	To warrants issued for purchase of bonds for School Fund.....	220,000 00	June 30th, 1873...	By receipts.....	173,722 61
	To certificates of transfer.....	520 13			
	To balance.....	30,423 59			
		$264,870 80			$264,870 80
			July 1st, 1873.....	By balance.....	$30,423 59

TABLE No. 13.

Statement of the bonds held in trust by the State Treasurer for the School Fund.

Bonds of 1870, seven per cent	$236,000 00
Bonds of 1872, seven per cent	115,000 00
Funded Debt Bonds of 1873, six per cent	1,066,500 00
Total	$1,417,500 00

TABLE No. 14.

List of County Superintendents whose terms expire in March, eighteen hundred and seventy-four.

COUNTIES.	NAMES.	RESIDENCE.
Alameda	Rev. W. F. B. Lynch	East Oakland.
Alpine	R. W. Foster	Silver Mountain.
Amador	Rev. S. G. Briggs	Jackson.
Butte	H. T. Batchelder	Oroville.
Calaveras	Edward F. Walker	San Andreas.
Colusa	E. J. Edwards	Colusa.
Contra Costa	H. S. Raven	Alamo.
Del Norte	John R. Nickel	Crescent City.
El Dorado	Whitman H. Hill	Placerville.
Fresno	Rev. T. O. Ellis, Sr.	King's River.
Humboldt	James B. Brown	Eureka.
Inyo	John W. Symmes	Independence.
Kern	J. H. Cornwall	Linn's Valley.
Klamath	A. Hartz	Sawyer's Bar.
Lake	Mack Matthews	Lower Lake.
Lassen	Z. N. Spaulding	Susanville.
Los Angeles	W. M. McFadden	Anaheim.
Marin	Samuel Saunders	San Rafael.
Mariposa	David Egenhoff	Mariposa.
Mendocino	J. W. Covington	Ukiah City.
Merced	Jno. K. Law	Merced City.
Mono	J. S. Kikendale	Coleville.
Monterey	S. M. Shearer	Salinas City.
Napa	Rev. G. W. Ford	Napa.
Nevada	B. J. Watson	Nevada City.
Placer	John T. Kinkade	Auburn.
Plumas	J. A. Edman	Meadow Valley.
Sacramento	Samuel H. Jackman	Sacramento.
San Bernardino	John Brown, Jr	San Bernardino.
San Diego	B. S. McLafferty	San Diego.
San Francisco	J. H. Widber	San Francisco.
San Joaquin	W. R. Leadbetter	Stockton.
San Luis Obispo	P. A. Forrester	Cambria.
San Mateo	H. E. Jewett	Redwood City.
Santa Barbara	J. C. Hamer	Santa Barbara.
Santa Clara	George F. Baker	San José.
Santa Cruz	H. E. Makinney	Santa Cruz.
Shasta	W. L. Carter	Shasta.
Sierra	A. M. Phalin	Port Wine.
Siskiyou	Grove K. Godfrey	Yreka.
Solano	William H. Fry	Elmira.
Sonoma	George W. Jones	Santa Rosa.
Stanislaus	James Burney	Modesto.
Sutter	J. H. Clark	Yuba City.
Tehama	F. A. Vestal	Tehama.
Trinity	William Lovett	Weaverville.
Tulare	S. G. Creighton	Visalia.
Tuolumne	John York, Jr.	Sonora.
Ventura	S. S. F. Buckman	San Buenaventura.
Yolo	Giles N. Freman	Woodland.
Yuba	Thomas H. Steel	Marysville.

TABLE No. 15.

List of County Superintendents elected September third, eighteen hundred and seventy-three, and their Post Offices.

COUNTIES.	NAMES.	POST OFFICE.
Alameda	Rev. W. F. B. Lynch	East Oakland.
Alpine	A. C. Pratt	Monitor.
Amador	Rev. S. G. Briggs	Jackson.
Butte	H. T. Batchelder	Oroville.
Calaveras	J. B. Garvey	Angels.
Contra Costa	A. Thurber	Pacheco.
Colusa	J. E. Putnam	Colusa.
Del Norte	Max Lippowitz	Crescent City.
El Dorado	Jno. Munson	Placerville.
Fresno	Rev. T. O. Ellis, Sr.	King's River.
Humboldt	E. C. Cummings	Ferndale.
Inyo	George H. Hardy	Independence.
Kern	L. A. Beardsley	Bakersfield.
Klamath	S. L. Finley	Sawyer's Bar.
Lake	Louis Wallace	Middletown.
Lassen	Z. N. Spalding	Susanville.
Los Angeles	George H. Peck	El Monte.
Marin	Samuel Saunders	San Rafael.
Mariposa	David Egenhoff	Mariposa.
Mendocino	J. H. Seawell	Ukiah City.
Merced	B. F. Fowler	Snelling.
Mono	E. R. Miner	Benton.
Monterey	R. C. McCroskey	Salinas City.
Napa	Rev. G. W. Ford	Napa.
Nevada	Frank Power	North San Juan.
Placer	John T. Kinkade	Auburn.
Plumas	W. S. Church	Quincy.
Sacramento	Dr. G. R. Kelly	Sacramento.
San Bernardino	Henry Goodcell, Jr.	San Bernardino.
San Diego	J. H. S. Jamison	North San Diego.
San Francisco	James Denman	San Francisco.
San Joaquin	T. O. Crawford	Stockton.
San Luis Obispo	James M. Felts	Cambria.
San Mateo	C. G. Warren	Redwood City.
Santa Barbara	Rev. J. C. Hamer	Santa Barbara.
Santa Clara	J. G. Kennedy	San José.
Santa Cruz	W. H. Hobbs	Soquel.
Shasta	L. K. Grim	Shasta.
Sierra	A. M. Phalin	Port Wine.
Siskiyou	William Duenkel	Yreka.
Solano	C. W. Childs	Suisun City.
Sonoma	A. C. McMeans	Santa Rosa.
Stanislaus	James Burney	Modesto.
Sutter	M. C. Clark	Yuba City.
Tehama	Charles D. Woodman	Tehama.
Trinity	Hiram H. Bragdon	Weaverville.
Tulare	R. P. Merrill	Porterville.
Tuolumne	John Murnan	Sonora.
Ventura	F. S S. Buckman	San Buenaventura.
Yolo	G. N. Freman	Woodland.
Yuba	Th. H. Steel	Marysville.

II.—STATE BOARD OF EDUCATION.

III.—STATE BOARD OF EXAMINATION.

STATE BOARD OF EDUCATION.

The State Board of Education, as now constituted, consists of nine ex officio members, viz.: The Governor, Superintendent of Public Instruction, the Principal of the State Normal School, and the County Superintendents of San Francisco, Sacramento, Santa Clara, San Joaquin, Alameda, and Sonoma.

The Board, as it now stands, is composed of the following gentlemen: Governor Newton Booth, President; Hon. Henry N. Bolander, Superintendent of Public Instruction, Secretary; Professor Charles H. Allen, Principal of the State Normal School; J. H. Widber, Esq., of San Francisco; Samuel H. Jackman, Esq., of Sacramento; Geo. F. Baker, Esq., of Santa Clara County; W. R. Leadbetter, Esq., of San Joaquin County; Rev. W. F. B. Lynch, of Alameda County; Geo. W. Jones, Esq., of Sonoma County. Of these, Messrs. Widber, Jackman, Baker, Leadbetter, and Jones, will retire March first, eighteen hundred and seventy-four, and their places assumed by Messrs. James Denman, G. R. Kelly, J. G. Kennedy, T. O. Crawford, and A. C. McMeans, County Superintendents elect of San Francisco, Sacramento, Santa Clara, San Joaquin, and Sonoma Counties, respectively.

The principal work of the Board has been the revision of the course of studies adopted in eighteen hundred and seventy. The following are the principal alterations made by the revised course of studies:

1. In reading, the Fourth and Fifth Readers are to be completed each in two years, instead of one, as formerly. The Sixth Reader has been discontinued, except *in the advanced grade.*

This change was imperatively demanded. Both the Fourth and the Fifth Readers are so voluminous that no child could master either of them in a ten months' term of school.

2. In spelling, the spelling books have been discontinued, and the minimum requirement is now that the child be taught to spell orally, or write at dictation, any word or paragraph of the reading lessons and the technical words used in the several branches taught.

The reason for this change from spelling-book lesson to the spelling of the words with which the child becomes practically acquainted in reading, writing, and studying, is obvious. Spelling isolated words, as they are usually arranged and grouped in spelling books, is a mere waste of time. It has a tendency to accustom pupils to use words, or read words, without associating a meaning with them; for isolated words

awaken and produce no ideas; and, because they do not, pupils have no use for them, are not interested in them. Being mere empty, meaningless signs, they are speedily eliminated, rejected, and forgotten. The only logical and effective method of teaching spelling is to teach it in connection with every lesson in reading, history, geography, etc. In pursuing this consistent course, we accustom pupils to take notice of the orthography of words at all times, and not at stated spelling lessons only.

"In Scotland," says Horace Mann, "the spelling-book is called the 'spell book,' and we ought to adopt that appellation here, for, as it is often used with us, it does cast a spell over the faculties of children, which generally they do not break for years, and oftentimes, we believe, never. If any two things on earth should be put together, and kept together, one would suppose that it should be the idea of a thing and the name of a thing. The spelling-book, however, is a most artful and elaborate contrivance, by which words are separated from their meanings, so that the words can be transferred into the mind of the pupil, without permitting any glimmer of their meaning to accompany them. A spelling-book is a collection of things without the thing signified—of words without sense—a dictionary without definitions. It is a place where words are shut up and impounded so that their signification can not get at them; yet formerly it was the almost universal practice—and we fear it is now nearly so—to keep children two or three years in the spelling-book, where the mind's eye is averted from the object, qualities, and relation of things, and fastened upon a few words, of themselves wholely uninteresting."

3. Arithmetic, in the old course, was taught, during the first school year, by use of objects, as beans, marbles, numeral frames, etc.; Arabic and Roman numerals to ten, might be taught from blackboard; counting to one hundred. The revised course provides that clear and ready perceptions of numbers from one to ten are to be developed by use of objects, and at every successive step all possible additions, subtractions, multiplications, and divisions of integral numbers are to be learned within each limit as it is reached.

For the second school year, the old course taught Roman numerals to fifty, counting by twos, threes, fives, and tens to two hundred; adding and subtracting to fifty, using no figure larger than six. The revised course requires exercises, mental and written, in addition, subtraction, multiplication, and division of numbers, from ten to twenty-five, in continuation of the work laid down for the preceding year; clear and ready perceptions of numbers from ten to one hundred. The child having obtained clear perceptions of the enumeration of tens, the same work must be performed upon them which, in the preceding year, was performed upon units, but with this difference: that while tens are to be added to tens, or subtracted from tens, they are to be multiplied or divided by no number exceeding nine.

In the third school year, the old course introduced Robinson's Progressive Primary Arithmetic to page forty-two; required counting by twos, fives, tens, and twenties to two hundred, forward and backward; Roman numerals to two hundred. The revised course retains the textbook, at option of teacher, and requires exercises in notation and numeration to one thousand; exercises, mental and written, in addition, subtraction, multiplication, and division of numbers within one hundred, the sum or product in no case to exceed one hundred; in addition, subtraction, and multiplication the units to be added, subtracted, or multi-

plied first, then the tens; principles of carrying forward and borrowing illustrated; in division, the tens to be divided first, then the units; multiplier and divisor not to exceed nine; same operations to be performed upon hundreds as performed in preceding years upon units and tens; ideas of vulgar fractions to be developed, notation of same to be taught to ninths; same operations upon these fractions as upon the numbers from one to ten in the first school year; Roman numerals to C.

For the fourth year, the old course provided Robinson's Progressive Primary completed; multiplication table taught forward and backward as far as six times twelve; slate and blackboard drill exercises in addition, subtraction, multiplication, and short division daily. The revised course provides numeration and notation to millions; exercises in addition, subtraction, multiplication, and division of numbers to one million, multiplier and divisor not to exceed nine; reduction of mixed numbers to improper fractions, and the contrary; division of fractions having one for numerator by whole numbers (divisor not to exceed nine), illustrated objectively; Roman numerals finished; Robinson's Progressive Primary Arithmetic finished, at option of teacher.

For the remaining school years the revised course remains the same as the old course, except that Robinson's Rudiments of Arithmetic has been substituted for the Progressive Practical, in the fifth and sixth school years.

Mental arithmetic holds the first place in importance in every day life; for the greatest part in common business computations is done without the aid of paper, slate, or pencil. Accuracy in analysis, and facility in computation, are the aims of the study of mental arithmetic; and the analysis of the examples in mental arithmetic are usually the best means of leading to a solution of the more difficult problems of written arithmetic. Hence, mental and written arithmetic should be always combined.

Whilst written arithmetic is, so to say, reduced to a secondary position, yet it is of the utmost importance to teach it—on the slate and blackboard, from the lowest class upwards. The analysis furnished by mental arithmetic should be frequently written out in full, so as to serve as a model for the solution of more difficult problems in written arithmetic involving the same principle. But the rule must be always, that every example in written arithmetic which readily admits of it, should be solved without the aid of slate and pencil.

The child is not to be taught, *cannot* be taught, the science of number. The child can deal with number only as a property of bodies. Hence, the child's ideas of number are dependent on the actual presentation of objects; and every step in arithmetic must be illustrated by the things which the child sees about it. Every relation between numbers, every principle of arithmetic, whether of numeration or of one of the four fundamental operations, must be taught by the help of objects, such as the balls of the abacus, marbles, pencils, sticks, or marks on the blackboard, etc. In the first school year *units* are considered; in the second school year *units* are grouped in *tens*, and tens are considered; in the third school year *tens* are grouped into *hundreds*, and *hundreds* are considered. To teach, as above indicated, in the first school year single objects are presented to the class; in the second school year, groups of objects consisting of ten each; in the third school year, groups of objects consisting of one hundred each.

Under the old course, arithmetic was seldom taught until the child was old enough to use a text-book; and there were plenty schools in

which pupils of three or four years standing, and who were reading in the Third or Fourth Reader, had received no instruction whatever in arithmetic, except, perhaps, in counting to one hundred. When arithmetic was taught, it was mainly by requiring pupils to memorize tables and combinations. Thus, addition, subtraction, multiplication, and division, were taken in their regular order. First, in the Primary Arithmetic, then in the Intellectual, and thirdly, in the Practical. Each of them began with addition, and every year or two, the pupil found himself confronted by the old processes in their regular order. Grube, Wiedeman, and others, proposed a different system. Grube, "within the limits of the small numbers, took up each of them, commencing with 1, and taught the child all there is to know about it, before he passed over to another number. Treating, for instance, the number 2, he made the children perform all the operations that are possible within the limits of this number, no matter whether, in the usual classification, they are called addition, subtraction, multiplication, or division. The child had to see and to keep in mind that $1+1=2$, $2\times1=2$, $2-1=1$, $2\div1=2$, etc. The whole circle of operations up to 2 was exhausted, before the child progressed to the consideration of the number 3, which was to be treated in the same way. Why adhere to the more scientific categories of addition, etc., in the primary grade, when they do not help to make the subject any clearer to the child? The first four processes are naturally connected, and will appear so in the child's mind. If you take away 1 from 2, and 1 remains, the child, from knowing this, also understands implicitly the opposite process of adding 1 to 1, and its result. Multiplication and division are, in the same way, nothing but another way of adding and subtracting, so that we might say one operation contains, and may be shown to contain, all the others. 'You must teach the child to know the numbers in some one way or other,' says Grube, 'but to know a number really means to know also its most simple relations to the numbers contained therein.' Any child, however, who knows a number and its relation, must be also able to perform the operations of adding, subtracting, etc., with it, for they are the direct result of comparing or 'measuring' two numbers with each other. Only when the child can perform all these operations, for instance, within the limits of 2, can it be supposed really to have a perfect knowledge of this number. So Grube takes up one number after the other, and compares it with the preceding ones, in all imaginable ways, in regard to addition, subtraction, multiplication, and division. This comparing, or 'measuring,' takes place always on external, visible objects, so that the pupil can see the objects, the numbers of which he has to compare with each other."—[Louis Soldan, Assistant Superintendent of Saint Louis Public Schools.

This method of teaching arithmetic rests not only on a sound philosophical basis, but it has proved superior in practice to the methods in use before its invention. To illustrate the method, an outline is given of the work required to be gone through with in the first three school years.

Instead of first teaching to count from 1 to 2, and then to add from 1 to 10, etc., the number 2 is first taken, then the number 3, then 4, and so on, counting as far as each, adding, subtracting, multiplying, and dividing each, in every way possible, without using any figure not yet reached.

In this method there are ten steps for mental reckoning, and twelve for slate exercises, thus:

A. Mental exercises (take the number 3, for example):
1. Making the number. (1 + 1 + 1.)
2. Counting forwards. (1, 2, 3.)
3. Counting backwards. (3, 2, 1.)
4. Addition. (2 + 1. 1 + 2.)
5. Subtraction. (3 — 1. 3 — 2. 3 — 3.)
6. Multiplication. (3 × 1. 1 × 3.)
7. Analysis. (3 = 2 + 1. 3 = 1 + 1 + 1.)
8. Division. (3 ÷ 3. 3 ÷ 2.)
9. Comparison. (3 is one more than 2; 2 more than 1.)
10. Illustrative problems. (Charles has 2 slates and has bought 1 more; how many slates has Charles now?)

B. Slate exercises.
11. Most of the above exercises, with various marks.
(| | + | = | | |. | + | | = | | |.)
12. The same in figures. (2 | 1 = 3. 1 + 2 = 3.)

It is considerable work to thoroughly go through these exercises on every number from 1 to 10, but it can be completed in the first school year; and, being done, we may be assured that the pupils will not only have a satisfactory idea of these numbers, but will also have laid a good foundation for their future progress in arithmetic.

PRACTICAL ILLUSTRATION OF THIS METHOD, TAKING THE NUMBER TWO.

A.—*Mental Exercises.*

I. Composing the Number.—Show me one hand. How many hands are there? There is one hand. Can you show me one hand more? Repeat: there is one hand more. How many hands are there now? How many hands have you then? We have two hands. The same exercise with arms, eyes, cheeks, ears, etc.

How many ears has a cat? A cat sometimes catches a little mouse. How many ears does the mouse have? etc., etc.

II. Counting Forwards.—I place one soldier on the desk, and at a little distance two soldiers. How many soldiers are here? Two. Repeat: there is one soldier, there are two soldiers.

The same exercise with balls on the abacus, and with other objects.

Blackboard.—I write one dot, and at a little distance, two dots. How many dots are here? One. How many here? Two. Now, we will count quickly: one, two. What comes first? One. What next? Two.

We have now counted. What have we done? Because we first said the *smaller* number, one, and then the number that means more than one, two, we say we have counted *forwards*. What do we say? Now, count forwards once more. Again, louder.

III. Counting Backwards.—Watch closely what I am going to do. How many balls have I here? Two. How many here? One. How many came first? Two. How many next? One. When we count this way which number must we take first? Two. Which then? One. So, now we count two, one. Count that way yourselves. This time we have said the *larger* number first, and then the smaller, have we not?

The same with other objects. Repeat this many times, always with new objects.

On the Blackboard.—How many crosses have I made here? Two. How many here? One. Which do we take first, the most crosses, or the fewest? The most. And then? The fewest.

When we count this way, first saying the greater number, and then the smaller, we count *backwards*. What do we do? You may count backwards once.

The same with other marks.

Now let us see if we can count *forwards* again. Give attention to what I write on the blackboard. (| | | .) Count. Look again. (| | |) How must you count this? Backwards. Count.

IV. ADDITION.—Hold up one hand. How many hands are there? Hold up one hand more. Repeat: Here is one hand more. How many hands are there in all? Repeat: One hand and one hand more are two hands.

The same with other objects; but always let the answers be given in a complete sentence, thus: One finger and one finger more are two fingers. One soldier and one soldier more are two soldiers. One ball and one ball more are two balls.

On the Blackboard.—What have I made on the blackboard now? (One ring.) What have I made again? (One ring more.) How many rings are there in all? One ring and one ring more are two rings. Repeat it after me. One line and one line more are two lines. One dot and one dot more are two dots. One cross and one cross more are two crosses.

But we can say this a shorter way; we can say, one and one are two. What can we say?

V. SUBTRACTION.—How many fingers am I holding up? Two. How many fingers are there then? Two. Now, watch carefully. (I bend one finger slowly down.) Are there two fingers now? No. How many are there? One. How many fingers have I taken away? One. How many fingers remain then if you take one finger from two fingers? When you take one finger from two fingers, one finger remains.

The same with other subjects.

We can say this a shorter way, also; we can say: one from two leaves one; or, two less one is one.

Two boys. How many boys do you see by me? Two. I will put one of them behind the door. How many do you see now? One. How many boys less than there were? One. How many were there at first? Two. When there is one boy less there is only one boy; so we can say: two boys less one boy leaves one boy. Repeat that. Or we can say it shorter: two less one is one. How can we say it?

Look at something quite new which I am going to show you.

How many books have I in my hand? Two. I lay them away one at a time. How many books have I in my hand now? Not any. How is that? Because you have just put them away. How many books did I have? Two. And how many have I laid away? Two. And how many books are left? None. Then if I have two books and take two away, how many books have I left? None.

Boys, pencils, rulers, etc.

We can say this shorter, also: We can say, two from two leaves nothing; or, two less two is nothing.

On the Blackboard.—How many apples have I drawn? Two. How many have I erased? One. How many are still there? One. (Draw trees, stars, etc.) As before: one from two leaves one.

How many straight lines have I made now? Two. How many have I erased? Two. How many are still left? None. (Dots, rings, etc.) As before: two from two leaves nothing.

Review.—How many are left when you take two away from two? How many when you take only one from two? When you take one from one?

VI. Analysis of the Number.—How many balls are on this corner of the abacus? Two. The two balls are so close to each other that they look as if they had grown together, do they not? But look, I can separate these into two parts. How many are in this part? One. And how many in the other part? One. If I shove them together we shall have a whole two again. So the number two is made of two parts. Of how many parts is two made? Each part is one ball; therefore I can say, two balls is one ball and one ball more. (Pencils, etc.)

We can say this shorter: We can say, two is one and one more.

Blackboard.—Make two straight lines. How many lines do you see? I will tie them together so that it will be a whole two. (II) Into how many parts could we divide this two? Into two parts. Let us do it. (| |) Of what is this two made? Of one and one.

VII. Multiplication.—We have seen that two is made from one and one. I will show it to you again. (Two balls close together.) That is a whole two. (Separate the two balls.) How many balls are here? One. How many here? One. Then there is one here and one here; there is only *one* ball each time. *Here* is once one ball, and *here* is once one ball. How many times, then, can you see one ball? Two times. And two times one ball are how many balls? Two balls. Repeat after me: Two times one ball are two balls. We can also say it shorter, thus: two times one are two. Repeat that after me. (The same with blocks, etc.)

On the Blackboard.—Make a ring on the blackboard. How many rings have I made? You have made one ring. How many times have I made one ring? You have made one ring once. So that is once one ring. (Make another ring.) How many times have I made one ring now? You have made one ring two times. And two times one ring are how many rings? Two times one ring are two rings. Said shorter it is thus: two times one are two. Repeat it after me. Once more. Once again.

VIII. Division.—James, come here to me. Take these two pencils; hold them up high. How many pencils has James? Two. Charles and John, come here. You shall divide these pencils between you. How many pencils has James? Two. How many boys are to divide these pencils between them? Two. Divide them. Hold them up high so that we can see how many each one has. How many has Charles? One. How many pencils has John? One. Then when two boys divide two pencils between them, how many does each boy receive? One. Repeat this together: If two boys divide two pencils between them, each boy receives one pencil. (Balls, slates, pens, etc.)

Result: When two is divided by two, each has one.

Blackboard.—Draw two apples not very near together. How many apples are there? Two. Frank and Willie, come here; you may divide these two apples between you. How many apples are there. Two. How many boys are to divide these two apples? Two. Now divide them. How many will Frank have? One. Let him put his finger on his apple. How many can Willie have? One. Let Willie put his finger on his apple. When two boys divide two apples between themselves,

now many apples does each receive? One. When two is divided by two, each has one. Repeat it again.

IX. COMPARISON.—I call out two children and give one ball to one and two balls to the other. How many balls has Lizzie? One. How many has Mary? Two. Who of the two has the most? Mary. How many balls has Mary? Two. And Lizzie has only how many balls? One. How many has Mary more than Lizzie? Mary has one more. Then the one that has two has one more than she that has one. Repeat that after me. The one that has two, etc. How many more is two than one? Two is one more than one. (The same with other things.)

Now tell me who of the two little girls has the least number of balls? Lizzie. How many balls has Lizzie? One. How many balls has Mary? Two. How many balls has Lizzie less than Mary? Lizzie has one less. Then she that has one ball has one ball less than she that has two balls. Repeat: she that has one ball, etc. How much less than two balls is one ball? One ball is one less than two balls. We say it shorter in this way: one is one less than two.

Blackboard.—(Make one straight line, and at a little distance two straight lines). How many lines are here? One. How many there? Two. How many more lines there than here? One. Then two lines are how many more than one line?

Result: two is one more than one.

I draw one tree and at a little distance two trees. How many trees are here? One tree. How many there? Two trees. How many less trees here than there? One tree less. One tree, then, is how much less than two trees? One tree is one tree less than two trees. Shorter: one is one less than two.

X. ILLUSTRATIVE PROBLEMS.—Charles had one slate, and his father gave him one slate more; how many slates had Charles then? In a garden were two apple trees; the wind blew down one of the apple trees; how many apple trees were left standing? Alfred went fishing, and twice he caught one fish; how many fishes did Alfred catch in all? If two little boys divide two marbles between them, how many marbles will each boy have? Benjamin had one picture-book and Jacob had two picture-books; how many more picture-books had Jacob than Benjamin?

B.—*Slate Exercises.*

I. COMPOSING NUMBERS.—Make one straight line. Make one other straight line. How many straight lines have you made? (Dots, crosses, etc.)

II. COUNTING FORWARDS.—Make one dot. Make two dots a little way from the one dot. How many dots stand first? How many next? One, two. (Rings, etc.)

III. COUNTING BACKWARDS.—Make two crosses on your slates. Make one cross a little below the two crosses. How many crosses stand first? How many next? Two, one.

IV. ADDITION.—If the children are to reckon on their slates in the four rules from one to ten, it is necessary for them to become acquainted with the four signs: $+ - \times \div$. This should be taught immediately with the operations on the number two. I tell them that $+$ means "and" or "add to;" that $-$ means "to take away," and is read *minus;* that $\times$ means so many times as the number expresses which stands next to it; that $\div$ means we are to divide; and that $=$ means is, are, remains, etc., and is read *equal.*

Although they do not learn immediately, and perhaps not readily, what these signs mean, yet, as a general thing, they learn them after a little time without much trouble.

For example: Make one straight mark; then make a cross; then another straight mark; then =. How are you to read this example? One straight mark and one straight mark are. And how much are one and one? Two. Very well; now write these two straight marks at the end: | + | = | |. (Dots, rings, etc.)

V. SUBTRACTION.—Make two dots near together; after them make a short horizontal line (—); after that make one dot; then make two horizontal lines after the one dot. Tell me what the one horizontal line means. It means take away. Read the example to me. How many shall we take away? One. From what shall we take away the one dot? From the two dots. How many dots will remain? We will write the number of dots that remain after the two horizontal lines: . . — . = .

Of course the teacher is also to write all this, at the same time as the pupils, on the blackboard.

VI. ANALYSIS.—We have already learned what makes the number two. What is the number two made of? One and one. We will now make the number two on the blackboard and slates. Make two straight marks; after them make two short horizontal lines. What is it that makes the number two? We will write that next. First make one straight mark. What sign means "and?" A cross. Make such a cross. Now it is read "two is one and." What must we add to that? One straight mark more. Make it. Let us read this example: | | = | + | .

VII. MULTIPLICATION.—How many was two times one? Two. Let us write that on the slate. Make two straight marks. That is a two. Now we will make a cross of two slanting lines (×). This cross tells us that we shall take some number as many times as the number that stands before the cross. In short, this sign means "time" or "times." Tell me what you have on your slates now. Two times. Now make one straight mark more, and after it two short horizontal lines. Read what you have on your slates now. Two times one is. Tell me, how much is two times one? Two. Very well. So we have only to put two more straight lines at the end of what we have written and it is finished. Read the whole of what you have written. | | × | = | | .

VIII. DIVISION.—Do you remember how much each one receives when you divide two things between two persons? One thing. When we wish to divide anything we make this sign: ÷. What does this sign tell us to do? To divide. Now, make two straight marks on your slates. These two marks are to be divided; therefore, what sign must we write after them? Two dots, with a horizontal line between them. These two marks are to be divided into two parts; therefore, after the sign you must write two marks and then two straight horizontal lines. How must you read what you have written? Two divided into two parts. How much will there be in each part? One. Then what must we write at the end? One mark. Read what you have written: | | ÷ | | = | .

IX. THE FIGURES.—Make two dots, rings, etc. How many dots are there? Two. Then that is the number two. But grown people write the number two another way; they write it like this: 2. How many does this figure (2) mean? It means two. Now write a two as grown people write it.

Again: How many hands have you? Two. If you wished to write that, how many straight marks would you have to make? Two. But

your mother would write it another way. If she wishes to write that there are two eggs in the closet, she does not make two straight marks, but she make the figure two, thus: 2. This figure means just the same as the number two or as two straight lines. It makes no difference whether we write two straight marks, two rings, two dots, or the figure 2.

C. *Written Arithmetic with Figures.*

I. ADDITION.—You have learned to make two figures; what are they? One and two. Let us try to write with these figures. Pay attention. I write: 1+1=. Read what I have written. One and one is. How much is one and one? Two. What figure must I write at the end? A two. 1+1=2. You may now write the same on your slates.

II. SUBTRACTION.—I write the figure 2. How much does that figure mean? It means two. I write a horizontal line thus, — after the figure 2. What does that horizonal line mean? It means to take away from. I now write the figure 1 and two horizonal lines after it. How shall we read what I have written? Two, one taken away, is; or, two minus one is. What remains when I take one away? One remains. Then what figure must I write at the end? The figure 1. $2-1=1$. You may now read it.

III. ANALYSIS.—What is it that makes two? One and one. Let us write that with figures. Make the figure 2. After the figure make two short horizontal lines, thus: =. You say two is made from one and one; how many ones must we then make after what we have already written? Two ones. Make them. I also make them, but write them purposely, thus: 1 1. Read that. One, one. But it must be one *and* one. What sign must we put between the ones? A cross. Make a cross (+) between the figures. How must we read the whole of what we have written? Two is one and one; or, two equals one and one. $2=1+1$.

IV. MULTIPLICATION.—Let us now reckon how many times one is. How much is it? Two. Let us first write it with straight marks, as we did before, thus: | | × | = | |. How do we read that? We will now try to write it in figures. What shall we write first? A figure 2. What next? The sign for "times." What next? A figure 1. How do you read that? Two times one. Now write two short horizontal lines. How much is two times one? Two. Then what must we write last? Two. $2\times1=2$. You may now write it on your slates.

V. DIVISION.—Now we will divide; and let us try that also with figures. How was the sign of dividing or division made? Two dots with a horizontal line between them. We want to divide two cherries between two boys. We must first write what we wish to divide: 2÷. How many boys are to divide them? Two What figure must we next write? The figure 2. $2\div2$. Read what we have now written. Two divided by two. Make two short horizontal lines. How many cherries will each boy receive? One cherry. Therefore, what figure must we write at the end? The figure 1. $2\div2=1$. Very well. You may now write it on your slates.

The foregoing is sufficient to show the method to be applied successively to each number from one to ten. Such teaching is indeed a hard task for the teacher's voice; but the arithmetic lesson must ever be considered the hardest in the lower classes, for, added to the great strain on the teacher's vocal powers, it is very difficult to maintain order and

the usual school discipline and at the same time to keep the young minds interested and enthusiastic in the lesson. Moreover, it looks more difficult on paper than it is in practice. Again, no method can be exactly suited to every teacher; the individuality of the teacher must always have scope; let the teacher only never neglect thoroughness, perception, and variety of application.

The following tables will give an idea of how the exercises on the slate should be performed, both with straight marks and figures, taking the number six as an example:

A. WITH STRAIGHT MARKS.

1. *Composing the number.*

```
1 1 1 1 1 1
```

2. *Counting forwards.*

```
1   1 1   1 1 1   1 1 1 1   1 1 1 1 1   1 1 1 1 1 1  |  1
                                                      |  1 1
                                                      |  1 1 1
                                                      |  1 1 1 1
                                                      |  1 1 1 1 1
                                                      |  1 1 1 1 1 1
```

3. *Counting Backwards.*

```
1 1 1 1 1 1   1 1 1 1 1   1 1 1 1   1 1 1   1 1   1  |  1 1 1 1 1 1
                                                     |  1 1 1 1 1
                                                     |  1 1 1 1
                                                     |  1 1 1
                                                     |  1 1
                                                     |  1
```

4. *Addition.*

```
    1+1  |      1+1 1  |    1+1 1 1  |   1+1 1 1 1  |  1+1 1 1 1 1
  1 1+1  |    1 1+1 1  |  1 1+1 1 1  |  1 1+1 1 1 1 |
1 1 1+1  |  1 1 1+1 1  |  1 1 1+1 1 1|              |
1 1 1 1+1|  1 1 1 1+1 1|             |              |
1 1 1 1 1+1|           |             |              |
```

5. *Subtraction.*

```
    1—1  |      1 1—1 1  |    1 1 1—1 1 1  |      1 1 1 1—1 1 1 1
  1 1—1  |    1 1 1—1 1  |  1 1 1 1—1 1 1  |    1 1 1 1 1—1 1 1 1
1 1 1—1  |  1 1 1 1—1 1  |1 1 1 1 1—1 1 1  |  1 1 1 1 1 1—1 1 1 1
1 1 1 1—1|1 1 1 1 1—1 1  |                 |  1 1 1 1 1 1—1 1 1 1 1
1 1 1 1 1—1|            |                 |1 1 1 1 1 1—1 1 1 1 1
1 1 1 1 1 1—1|          |                 |1 1 1 1 1 1—1 1 1 1 1 1
```

6. *Analysis.*

```
1 1 1 1 1 1=1+1+1+1+1+1  |  1 1 1 1 1 1=1 1 1+1 1+1
  1 1 1 1 1 1=1 1+1+1+1+1|    1 1 1 1 1 1=1 1 1+1 1 1
    1 1 1 1 1 1=1 1+1 1+1+1|  1 1 1 1 1 1=1 1 1+1+1+1
      1 1 1 1 1 1=1 1+1 1+1 1|  1 1 1 1 1 1=1 1 1 1+1 1
        1 1 1 1 1 1=1 1 1+1 1+1|  1 1 1 1 1 1=1 1 1 1 1+1
```

7. *Multiplication.*

1×1	1×11	1×111	1×1111	1×11111	1×111111
11×1	11×11	11×111			
111×1	111×11				
1111×1					
11111×1					
111111×1					

8. *Division.*

11÷11=1	111÷111=1	1111÷1111=1
111÷11=1.	1111÷111=1.	11111÷1111=1.
1111÷11=11	11111÷111=1.	111111÷1111=1.
11111÷11=111.	111111÷111=11	111111÷11111=1
111111÷11=111	11111÷11111=1	
	111111÷11111=1.	

9. *Comparison.*

11 is 1 more than 1	111 is 11 more than 1
111 is 1 more than 11	1111 is 11 more than 11
1111 is 1 more than 111	11111 is 11 more than 111
11111 is 1 more than 1111	111111 is 11 more than 1111
1111 is 111 more than 1	11111 is 1111 more than 1
11111 is 111 more than 11	111111 is 1111 more than 11
111111 is 111 more than 111	11111 1 is 11111 more than 1
1 is 11 less than 11	1 is 11 less than 111
11 is 1 less than 111	11 is 11 less than 1111
111 is 1 less than 1111	111 is 11 less than 11111
1111 is 1 less than 11111	1111 is 11 less than 111111
11111 is 1 less than 111111	1 is 1111 less than 11111
1 is 111 less than 1111	1 is 11111 less than 111111
11 is 111 less than 11111	1 is 1111 less than 11111
111 is 111 less than 111111	

B. WITH FIGURES.

a. Writing of figures, thus: 2= | | ; 3= | | | ; 6= | | | | | |.
b. Forwards: 1, 2, 3, 4, 5, 6.
c. Backwards: 6, 5, 4, 3, 2, 1.

d. Addition.

1+1	1+2	1+3	1+4	1+5
2+1	2+2	2+3	2+4	
3+1	3+2	3+3		
4+1	4+2			
5+1				

e. Subtraction.

1—1	2—2	3—3	4—4	6—6
2—1	3—2	4—3	5—4	
3—1	4—2	5—3	6—4	
4—1	5—2	6—3		
5—1	6—2			
6—1				

f. Analysis.

6=1+1+1+1+1+1	6=3+2+1
6=2+1+1+1+1	6=3+3
6=2+2+1+1	6=4+1+1
6=2+2+2	6=4+2
6=3+1+1+1	6=5+1

g. Multiplication.

1×1	1×2	1×3	1×4
2×1	2×2	2×3	1×5
3×1	3×2		1×6
4×1			
5×1			
6×1			

h. Division.

2÷2	3÷3	4÷4	5÷5	6÷6
3÷2	4÷3	5÷4	6÷5	
4÷2	5÷3	6÷4		
5÷2	6÷3			
6÷2				

i. Comparison.

6 is 1 more than 5	1 is 5 less than 6
6 is 2 more than 4	2 is 4 less than 6
6 is 3 more than 3	3 is 3 less than 6
6 is 4 more than 2	4 is 2 less than 6
6 is 5 more than 1	5 is 1 less than 6

Of course all these examples are to be given promiscuously, as well as in regular order.

The work thus begun in the first school year is continued through the second school year. The exercises for every number from ten to twenty-five must be similar to those given above for the numbers two and six. Still, it may be of service to give another example. Let us take the number nineteen. To save time, the mental exercises (A. of the number two) are left out, it being understood that every operation must be introduced and illustrated by means of the things which the pupil sees about him.

Premising, therefore, that the following exercises have been properly introduced and illustrated by mental exercises, and secondly, that all the slate and blackboard exercises—which here are only indicated by figures—are performed first by means of straight lines, dots, crosses, and other marks, and then with figures, as illustrated in the case of the number six, in the preceding division, we have the following exercises for the number nineteen:

1. *Composing or making the number.*—By means of the balls of the abacus, marbles, pencils, sticks, or marks on the blackboard, the child has learned that the number nineteen is composed of nineteen ones or units, or of one ten and nine ones or units:

(*a.*) l l l l l l l l l l l l l l l l l l l=19 units.

(*b.*) l l l l l l l l l l=1 ten.
l l l l l l l l l=9 units.

(*c.*) 10+l l l l l l l l l

(*d.*) 10+9, or 19.

2. *Counting Forwards and Backwards.*

Forwards from 1 to 19; 2 to 19; 3 to 19, etc.
Backwards from 19 to 1; 19 to 2; 19 to 3.
Regularly and promiscuously.

3. *Addition.*

(*a*) 1 + 1, 2 + 1, 3 + 1 to 18 + 1.
1 + 2, 2 + 2, 3 + 2 to 17 + 2.
1 + 3. 2 + 3, 3 + 3 to 16 + 3.
to
18 + 1
} Regularly and promiscuously.

(*b*) 1 + 2, 2 + 2, 3 + 2 to 1 + 2 + 2 + 2 + 2 + 2 + 2 + 2 + 2 + 2; or, instead of being written in a line, the figures may be placed under each other.

1 + 3, 2 + 3, 3 + 3 to 1 + 3 + 3 + 3 + 3 + 3 + 3. In a line and under each other.

1 + 4, 2 + 4, 3 + 4, 4 + 4 to 1 + 4 + 4 + 4 + 4. In a line and under each other.

1 + 5, 2 + 5, 3 + 5, etc., to 5 + 5 + 5; 14 + 5 to 9 + 9.

(*c*) Any addition of numbers, the sum not to exceed 19.

e. g. 1 + 3 + 5 + 2 + 7 + 1 = 19; or

1
3
5
2
7
1
—

4. *Analysis.*

(*a*) 19 is composed of 19 ones or units;
19 = 10 + 9; 15 + 4; 16 + 3, etc.

(*b*) 19 = 1 ten and 9 ones or units.

5. *Subtraction.*

(*a*) 1 — 1 to 19 — 1; 2 — 2 to 19 — 2; 3 — 3 to 19 — 3; so on up to 19 — 19.
(*b*) 19 — 2 — 2 — 2 — 2 — 2 — 2 — 2 — 2 — 2 = 1;
19 — 3 — 3 — 3 — 3 — 3 — 3 = 1;
19 — 4 — 4 — 4 — 4 = 3;
Up to 19 — 9 — 9 = 1.
(*c*) 19 — 1 — 7 — 3 — 2 — 6 = 0, etc.

6. *Comparison of Numbers.*

19 is 9 more than 10, etc.

7. *Addition and Subtraction.*

e. g. 6 + 8 — 7; 16 — 4 + 7; (8 + 4 + 7) — (3 + 2 + 1); etc.

8. *Multiplication.*

(*a*) 1 × 1, 2 × 1 to 19 × 1; 1 × 2, 2 × 2 to 9 × 2; 1 × 3, 2 × 3 to 6 × 3; so on up to 9 × 2.
(*b*) 2×2×2×2; 3×2×2; 4×2×2.
3×3×2; 2×3×3; 3×2×3; 4×4×1.
2×4×2; 2×2×4.

9. *Addition, Subtraction, and Multiplication.*

e. g. (3×4)—6; (2×5)+8; (6+3)×2; (4—3)×16.
6+8—7×2; (3×4)—(6×2)+7—3—3×2;
(4×2)—(2+4)+(3×5), etc.

10. *Division.*

(*a*) 19÷2, by 3, by 4, up to 19÷19.
(*b*) Give all numbers which are divisible by 2, 3, 4, 5, 6, 7, 8, 9, without a remainder.
(*c*) How many times are 2, 3, and to 9, contained in 19; can be taken from 19, etc?

11. *Miscellaneous Exercises.*

8+4=	3+3+3—8	2×3×3
7+5+6=	12÷6	4×3×1
19—4=	17÷4	16÷8
19—9=	16—12	18÷9
3×6=	2×2×2	
16÷4=	17—9+9=	
5+9—7=	9+9—11=	

How many times can we take 4 from 19?
How often is 5 contained in 19?
Take twice 2, 4, 6, 1, 3, 5, 7, 9, 8.
Add 2 to 2 so many times till the sum is 14, 18, etc.
Every number from ten to twenty-five is to be treated in the same

manner as the number nineteen. But the numbers greater than twenty-five become too unwieldy, so to say, to be thus treated. The child having had abundant practice in comparing one number after another with its preceding ones in all imaginable ways, in regard to addition, subtraction, multiplication, and division, is prepared to take a forward step. In order to prepare the way for this forward step, the child must have clear and ready perception of numbers from ten to one hundred. To this, it is necessary that the child understands clearly the following principles of notation:

11=10+1, *i. e.* 1 ten and 1 unit; 12=10+2, etc., to 19=10+9.
20=2 tens.
21 to 29=2 tens (or twenty)+1, 2, etc.
30=3 tens.
31 to 39=3 tens (or thirty)+1, 2, etc.
90=9 tens.
91 to 99=9 tens (or ninety)+1, 2, etc.
100=10 tens.

The child will soon learn; first, that but ten Arabic characters are used in notation; second, that of these only nine have a value of their own, an absolute value; third, that tens occupy the second place and units the first; fourth, that it always takes *ten* units to make *one* ten, or in general, that it takes ten of a lower order to make one of the next higher order. But great care must be taken not to make these exercises too technical. The abacus, or dots, or other marks arranged on a chart or on the blackboard in a tabular form, must convey clearly to the mind of the child the fact that ninety are nine *tens*; that nine are nine *units*; that the difference between ninety and nine is that in the former number we have nine *tens*, in the latter nine *ones* or *units*. Thereupon we may draw out the fact that in order to write ninety, we must write nine in the second place, and have some figure to the *right* of it, and that nine standing alone, or to the *right* of some other figure, is always *nine*, *i. e.*, nine *units*.

The child having obtained clear perceptions of the numeration of tens, the same work must be performed upon them, which, in the fourth division of this grade, was performed upon units; but with this difference, that while we add tens to tens, and subtract tens from tens, we multiply or divide tens by units, only. Let us take as an example, the number sixty, or six tens.

The following tables indicate the written exercises to be performed on the slate and blackboard. *Abundant mental or concrete examples must introduce and illustrate every step.* All the work must be performed with straight lines and other marks, and with figures.

A. WITH STRAIGHT LINES, ETC.

1. *Composing or making the number.*

1	1	1	1	1	1	1	1	1	1	=1 ten
1	1	1	1	1	1	1	1	1	1	=1 ten
1	1	1	1	1	1	1	1	1	1	=1 ten
1	1	1	1	1	1	1	1	1	1	=1 ten
1	1	1	1	1	1	1	1	1	1	=1 ten
1	1	1	1	1	1	1	1	1	1	=1 ten.

The number is composed of six tens—*i. e.*, of six groups, each of which contains ten units.

2. *Counting forward and backwards.*

1 1 1 1 1 1 1 1 1 1, 1 ten or ten; 1 1 1 1 1 1 1 1 1 1, 1 1 1 1 1 1 1 1 1 1, 2 tens or twenty; so on up to 6 tens or sixty.

Forwards and backwards.

[In the following tables 10 indicates always a group of ten straight marks, as in 1 and 2, and teachers must write out in full what, for convenience sake, is only indicated below.]

3. *Addition.*

10 + 10
10.10 + 10
10.10.10 + 10
10.10.10.10 + 10
10.10.10.10.10 + 10, etc. See page 223, where substitute ten straight lines for every one straight line.

4. *Analysis.*

10.10.10.10.10.10 = 10 + 10 + 10 + 10 + 10 + 10, etc. See page 223, and observe directions given under *Addition*.

5. *Subtraction.*

10 — 10
10.10 — 10, etc. See page 223, and observe directions given under 3 and 4.

6. *Comparison.*

10.10 is more than 10; *i. e.*, 2 tens is 1 ten more than 1 ten, etc. See page 224, and follow directions given above under 3, 4, and 5.

7. *Multiplication.*

10 × 1, *i. e.*, one times ten; one times two tens, etc. See page 224, and in the multiplicands substitute tens for the units, but the multiplier must remain units. Thus, the last example will be six times one ten is six tens or sixty.

8. *Division.*

10.10 ÷ 2, *i. e.*, two tens or twenty, divided by two, gives 1 ten or ten; three tens, or thirty, divided by two gives one ten or ten, remainder one ten, etc. See page 224, and in the dividends substitute tens for the units; but leave the divisors unchanged, *i. e.*, let them remain *units*.

B. WITH FIGURES.

The work is the same as given on page 224, except that for 1, 2, 3, 4, 5, and 6, wherever occurring, we substitute 10, 20, 30, 40, 50, and 60, respectively; except that in multiplication the multiplier remains 1, 2, 3, 4, 5, and 6, respectively; and in division the divisor remains 1, 2, 3, 4, 5, and 6, respectively.

The work for the third school year is a follows:

I. Exercise in notation and numeration of numbers to 1,000. Teachers must always bear in mind that to lay a good foundation thorough work is necessary; and that in instructing primary grades, constant resort to objects is imperative. To teach notation and numeration objectively we must teach, by means of objects, that integral numbers are formed by continually adding one to the preceding number; that we divide numbers into orders, and that *ten* of a lower order make *one* of the next higher order. Objects should be arranged into groups of ten each; ten such groups into a larger group to form a hundred; ten of this second class of groups [units are illustrated by individual objects, and form the first order; the first *grouping* occurs in forming tens when ten individuals are collected into one group, a ten] into a still larger group to form a thousand. In this and the preceding division the pupils may be profitably employed in writing on each of ten slips of paper or pasteboard, furnished by the teacher, ten or ten times ten straight lines, or crosses, or dots, etc. Each pupil of the third division will thus be supplied with *ten tens*; and if he is required to divide three tens or thirty into two equal parts, he soon sees that one ten falls to each part, and that one ten remains, which cannot be divided as a *ten*. In the second division, each pupil will have *ten hundreds*. It is perhaps best to let no slip contain more than ten marks, and to have a sufficient number of slips to give a thousand marks.

II. Exercises, mental and written, in addition, subtraction, multiplication, and division of numbers within 100, the sum or product in no case to exceed 100. In addition, subtraction, and multiplication, the units to be added, subtracted, or multiplied first, then the tens; principles of carrying forward and borrowing illustrated. In division, the tens to be divided first, then the units. Multiplier and divisor not to exceed nine.

In other words, the exercises which were heretofore performed upon units and tens separately, are now to be performed upon units and tens combined. The method of teaching this is so obvious that we shall simply indicate the steps.

1. *Addition.*

(*a*) Add numbers consisting of tens only to numbers consisting of both tens and units: 20 to 45; 30 to 65; etc. Here the tens alone are increased. (*b*) Add numbers consisting of tens and units to numbers consisting of tens only: 45 to 20; 65 to 30; etc. (*c*) Add numbers consisting of tens and units to each other: (1) 23 to 45, etc.; the sum of the units does not exceed nine; (2) 47 to 53; 65 to 27; etc., where the sum of the units exceeds ten, in which case the tens resulting from the addition of the units are *carried forward* to the tens—that is, the sum of the tens is derived (1) by the addition of the tens, to which add (2) the tens resulting from the addition of the units. The child will easily see the convenience of adding the units first, carrying forward the tens, if any, resulting from their addition; and then adding the tens, including the tens, if any, carried forward from the units. The examples should at first consist of two numbers only, but afterwards may consist of several numbers, in which case they must be placed under each other, units under units, tens under tens, but the sum must never exceed 100.

In adding columns of figures, the pupils must be trained to give only results at each step.

5
9
3
1
6
7

Improper.—Seven and six are thirteen, thirteen and one are fourteen, etc.

Proper.—Seven, thirteen, fourteen, seventeen, etc.

2. *Subtraction.*

(*a*) Minuend consists of tens and units, subtrahend of tens only: 45—30, etc. (*b*) Minuend and subtrahend consist of tens and units; units of the subtrahend not exceeding the units of the minuend: 68—41, 75—55, etc. (*c*) Minuend consists of tens only; subtrahend of tens and units: 80—41; 50—43; etc. Principle of borrowing illustrated. (*d*) Minuend and subtrahend consist of tens and units, the units of subtrahend exceeding the units of the minuend: 45—38; 62—29; etc. Principle of borrowing illustrated.

3. *Multiplication.*

(*a*) Multiplication table to 10×10. Children must construct their own tables. Children must be able to prove that 5×7 are 35; that 9×6=54.

7		5		9		6
7		5		9		6
7		5		9		6
7	or	5	or	9		6
7		5		9		6
		5		9		6
		5				6
						6
						6
7×5=35		5×7=35		9×6=54		6×9=54

(*b*) Multiplicand contains tens only. Multiplier not to exceed nine: 30×3, etc. Solution: 3 times 3 tens are 9 tens, or, ninety, just as 3 times 3 horses are 9 horses, etc. To introduce short multiplication it may be advisable to treat these examples also as follows: 30×3=3 times 0 units are 0 units; 3 times 3 tens are 9 tens, etc.

(*c*) Multiplicand consists of tens and units; multiplier not to exceed nine. (1.) Product of units does not exceed nine: 42×2; 31×3, etc. Illustrate as follows:

42	31, etc.	42×2=2 times 2 units are 4 units; write the
42	31	4 units; 2 times 4 tens are 8 tens; write the 8
—	31	tens, etc.
84	—	
	93	

(2) Product of units exceeds nine: 25×4, 15×5, 26×3, etc. Illustrate as follows:

25	15	26	15÷5=5 times 5 units are 25 units, or 2 tens
25	15	26	and 5 units; write the 5 units, and add the 2
25	15	26	tens to 5 times 1 ten, etc.
25	15		
	15		
100	75	78	

Teachers must remember that the product is not to exceed 100. All examples in multiplication will therefore be found within the following limits:

50 × 2, or 2 × 50;
33 × 3, or 3 × 33;
25 × 4, or 4 × 25;
20 × 5, or 5 × 20;
16 × 6, or 6 × 16;
14 × 7, or 7 × 14;
12 × 8, or 8 × 12;
11 × 9, or 9 × 11;
10 × 10.

4. *Division.*

(*a*) Division tables to 100 ÷ 10. Children must construct their own tables.

(*b*) Dividend contains tens only, exactly divisible by the divisor, which does not exceed 9: 60 ÷ 2, 80 ÷ 4. Solution: 6 tens divided by 2 give 3 tens, or thirty, etc. To introduce short division it will be advisable to treat these examples also as follows: 60 ÷ 2 =, 6 tens divided by 2 give 3 tens, or thirty; 0 units divided by 2 give 0 units, etc.

(*c*) Dividend consists of tens only, not exactly divisible by the divisor, which does not exceed 9: 30 ÷ 2, 60 ÷ 3, etc. Proceed as follows: 3 tens divided by 2, give 1 ten, leaving 1 ten undivided, which cannot be divided as a ten, but may be divided as 10 units, etc.

30 ÷ 2 =	10
20	5
10	15
10	
	etc.

(*d*) Dividend consists of tens and units, each exactly divisible by the divisor, which does not exceed 9, 63÷3, etc. Proceed as follows: 6 tens divided by 3 give 2 tens; 3 units divided by 3 give 1 unit, etc.

63÷3=	20
60	1
3	21
3	

(*e*) Dividend consists of tens and units, tens not exactly divisible by the divisor, which does not exceed 9. The whole dividend (1) exactly divisible, (2) not exactly divisible.

45÷3=4 tens divided by 3 give 1 ten; write 1 ten; 1 ten and 5 units, or 15 units, remain to be divided; 15 units divided by 3 give 5 units, etc.

45÷3=	10	97÷4=	20	
3	5	80	4	
15	15	17	24	and 1 remainder.
15		16		
		1		

III. Ideas of vulgar fractions to be developed; notations of same to be taught to ninths. Same operations upon these fractions as upon integrals from 1 to 10 in the fourth division of this grade.

The manner of developing the ideas of vulgar fractions is obvious, and we shall not waste space and time to give any illustrations. We call the attention of teachers to the necessity of teaching the subject by means of *objects*.

In regard to the operations to be performed upon them, every teacher can easily prove his own examples. The examples given on page 223 will serve as guides. Instead of having 6 units, we have $\frac{6}{7}$ or $\frac{6}{8}$, as the case may be, and we perform upon these $\frac{6}{7}$, etc., the operations indicated on page 223. To illustrate:

(*a*) Composing the number: $\frac{1}{2}, \frac{1}{2}, \frac{1}{2}, \frac{1}{2}, \frac{1}{2}, \frac{1}{2} = \frac{6}{2}$

(*b*) Counting forwards and backwards: $\frac{1}{2}, \frac{2}{2}, \frac{3}{2}$, etc.

(*c*) Addition: $\frac{1}{2} \times \frac{1}{2} = \frac{2}{2}$; $\frac{2}{2} \times \frac{1}{2} = \frac{3}{2}$, etc.

(*d*) Subtraction: $\frac{1}{2} - \frac{1}{2} = \frac{0}{2}$; $\frac{2}{2} - \frac{1}{2} = \frac{1}{2}$, etc.

(*e*) Multiplication: 1 times $\frac{1}{2} = \frac{1}{2}$; 3 times $\frac{2}{2} = \frac{6}{2}$, etc.

(*f*) Division: $\frac{6}{2} \div 2 = \frac{3}{2}$, etc.

(*g*) Analysis: $\frac{6}{2} = \frac{1}{2} + \frac{1}{2} + \frac{1}{2} + \frac{1}{2} + \frac{1}{2} + \frac{1}{2}$.

The following fractions are to be treated in the above manner:

$\frac{1}{2}, \frac{2}{2}, \frac{1}{3}$ to $\frac{3}{3}$; $\frac{1}{4}$ to $\frac{4}{4}$, etc., to $\frac{9}{9}$.

IV. After the numeration and notation of 10's has been learned, the 100's are to be added, subtracted, multiplied, and divided, in a similar manner as the 10's were added, etc., in the preceding division. By substituting 100's for the 1's, on page 223, the teacher will have a full schedule of the work. See, also, the remarks relating to 10's, page 230.

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4. In Geography, *Monteith's Introductory Geography* has been discontinued, and the use of a text-book is not allowed until in the fifth school year. A thorough course in Local Geography has been substituted for the memorizing of the text-book which usually constitutes studying of Geography. To show the scope of the geographical instruction required by the revised course, several extracts are given from an article entitled *Guides for Instruction in Local Geography*, published in the *California Teacher* for February, March, and April, 1873:

I. General Local Geography.

(*a.*) *Idea conveyed by the term "Local Geography" or Geography of Home.* The first thing in sketching a plan for teaching local geography, or the geography of home, is to determine what we mean by *our home*. Let us then ask what is generally understood by this expression? I am at home in the house where I live, in comparison with other houses; at home in the city or town which contains my dwelling house, in comparison with other cities or towns; at home in the scenes to which my eyes are accustomed, in comparison with strange scenes; at home in the land of my birth, in comparison with foreign lands; finally, at home on the earth, in comparison with other heavenly bodies, and only really first at home in the life beyond, in comparison with our pilgrimage on earth. Thus we see how variable may be the extent of this idea, how little and how much it may convey. But for our purpose a definite extent and definite limits are absolutely necessary. We shall therefore

agree to understand by the term home the place where we live and the scenery within our vision (without taking in points of great distance); the study of what lies within these limits is called *local geography*.

(*b.*) *Purpose of the study of Local Geography, and its relations to other Studies.*—The aim of this branch of instruction is then to give a knowledge of home. But here again we must be more exact, for how much may be comprised in the term *knowledge of home!* It comprises the visible phenomena of the heavens and of the atmosphere, the face and nature of the soil, also its irrigation; still further, the native animals, plants, and minerals; the artificial productions of its inhabitants; their dwellings and principal occupations; their social and foreign relations (the latter being generally expressed by trade and its channels); and, finally, the history of the place. Of course it is easy to see that all these subjects cannot be exhaustively treated in this branch of instruction; that would be the work of a lifetime, and more; think for a moment merely of the native plants and animals, and the historical part. Such is not to be the task of the instructor in local geography; to speak figuratively, he is not to count the stones in the streets, nor the shingles and slates on the roof; he has, rather, only to teach what would be found in *any* good geography of any country, province, or district. We should therein find mention of the natural and artificial productions, and of the history of the land, but only of the most important and characteristic, together with one or more marked peculiarities; but we should find no complete enumeration, description, or representation of these. The instruction of *local* geography must be the same; here, also, mention is only to be made of the most important and most striking natural productions, omitting all details; here, too, we should find something of history, but only of those events and occurrences of which the place mentioned has been the scene.

But has, then, the geography of a country nothing to do with the sun, moon, stars, and storms? By no means, although this belongs to general geography. This speaks of the revolution of the earth on its axis; of its relation to the other heavenly bodies, particularly to the sun; of climate and seasons; and for this division of general geography, observation of the native skies and of the atmosphere, may be a preparation. Thus local geography is essentially of a *geographical* nature, and, as such, is to be especially preparatory to future geographical studies.

Local geography also prepares and places in your hand other branches of instruction; for instance, as already mentioned, *the natural sciences*, in giving the names and localities of certain plants, animals, etc.; *natural philosophy*, in taking notice of common natural phenomena to be observed by the eye; history, in looking back into the past.

Local geography is also very important in teaching the command of *language*, inasmuch as the teacher should insist upon the correct, clear, and complete expression of what has been clearly comprehended. It also affords abundant material for short *written* exercises. It even touches upon *mathematics*, since, now and again, there are distances to be measured and counted, if only by steps.

Finally, I would mention *drawing* as another branch which local geography uses as her hand-maid in the representation of different geographical forms, in turn serving her again by thus training hand and eye for the study of drawing.

(*c.*) *Art and Manner of Instructing.*—Local geography is an integral part of sense-perception, or object teaching, and, as such, should be commenced with the child's first entrance into school. The purpose of

object teaching is to lead children to observe and to describe objects seen; it is to practice the senses of the child in correct perception and conception, and for this purpose, different objects are selected for the child to examine. It also introduces subjects and phenomena which cannot be directly produced before him, but which the child has already perceived, or can perceive outside the school-room; in a word, phenomena lying within the sphere of the child's life. In this way the child attains to a conscious knowledge of various perceptions already made by him, and these become regulated and raised to the rank of distinct ideas. But here the teacher has to guard against proposing too much to himself, since, although the child *might* have seen a great deal, there is perhaps much that he has not methodically observed, or that he has even not seen at all.

Hence we see that the principal aim of sense-perception teaching is of a methodical nature; it is to exercise the senses and to cultivate the power of observation. But as the cultivation of this power takes place by means of material substances, it therefore does not exclude, but includes the material plastic elements, namely: knowledge in regard to the phenomena considered. It is, at the same time, from these single building stones, collected one by one, that we are more easily enabled to build up later, the mental structure, the idea of home. And the "mentalizing," if I may be permitted the word, of surrounding phenomena peculiar to our home, the combining of them into one total image, is properly the final aim of this instruction. This we might call the top round of the ladder, and I would place it in the third school year, designating it by the name, Exclusive Local Geography. As on the lower round of the ladder *method* took preëminence, so, on the upper round it is to *material* that preëminence is to be given.

But yet the province of local geography proper is to take up within itself the normal aim of sense-perception teaching, and, at the same time, to continue in a certain direction beyond the limits of this aim. Its province is less to communicate and to teach, than so to guide through continual observation and examination, as to enable the pupils to acquire for themselves the desired knowledge. But there is much besides which must be given to the child; for instance, the historical part. Moreover, the mental vision will also be carried beyond the visible local boundaries, as in irrigation, natural or artificial, and here again *communication* of knowledge is indicated.

But I am wandering from my subject, which was the art and manner of instruction in local geography. Let us take the nearest way thereto.

Teaching of local geography is not easy. On the part of the teacher it requires skillful preparation, great circumspection and patience; on the part of the pupil, open eyes and close observation, even outside the school-room. Moreover, properly studied, it requires many excursions outside the walls of the school house, since, as many of the objects cannot be brought into the school-room, we must, therefore, seek them where they are situated.

Again, the pupil is to be energetic and persistent in searching out and observing for himself alone, this or that object. In this direction there are many well-adapted exercises, of which I shall point out but a few:

1. Exercises in *observation;* for example, the direction of a weather-vane.
2. Exercises in *examination*; for example, the different statues in a city.
3. Exercises in *discovery;* for example, where there are reservoirs in a

city, or springs or brooks in a country place; on what buildings there are weather-vanes, and what they look like.

4. Exercises in *measuring* and *counting*; for example, to measure by steps the length of a street, or width of a road, comparing distances thus measured between any two places.

These and similar problems the pupil can work out for himself, and thereby he is forced to be observing and attentive when the teacher is not by him.

It is best to give exercises of this kind directly before the conversational lesson on the selected subject, so that the pupil may come prepared beforehand.

What means of aid have you in local geography teaching, and how do you use them? Perhaps a plenty of charts and maps. But these are the very aids which are most likely to be misused. For example, it is a misuse of them when they are used from the commencement, and when instead of the actual locality only a picture of it is viewed, so that the scholar becomes less acquainted with the locality itself than with the map of it. One cannot be too strongly warned against this danger. Let this be your ruling principle: *First the object, then the picture*, so that the object will explain the picture, and not the picture the object. These auxiliary means mentioned should only be used after the perception has been gained from the reality, and after the scholar himself has drawn little sketches of it. He gains, too, so much the more pleasure from seeing, instead of his own imperfect attempt, something more perfect. In this way he comes to a right understanding of geographical maps in general, which is a great point gained for his future geographical studies.

I would also draw attention to another valuable auxiliary which, so far as I know, has never been called to aid. I mean photographs of the various important buildings, monuments, and statues of a city. Every child should procure the ones selected, and, after having seen the actual object, the photograph will be a material aid to his faculty of perception. Of course it would become a necessity that such photographs could be bought at a very low price.

Having given these general principles, I pass on to the treatment of the subject, dividing it into two parts, viz: the *primary steps* coming under the province of object teaching, and the *final steps* being Exclusive Local Geography. I have also to add that the primary steps can by no means be kept to any strict systematic order. The children have to observe separate objects as they present themselves; very often opportunity is given for comparison between two objects or phenomena. Nevertheless, although the children can follow no system in their observations, the teacher must have his own plan of instruction or he will soon find himself overwhelmed.

II. SPECIAL LOCAL GEOGRAPHY.

PRIMARY STEPS IN LOCAL GEOGRAPHY, belonging to the department of sense-perception instruction.

The School-room.—(Terms of distinction—below, before, behind, right, left.) Four walls, one floor, one ceiling. The walls *stand*, the floor and ceiling *lie*—ceiling above, floor below. Right wall, left wall, front wall, back wall. Four corners. Of equal size are ceiling and floor; right wall and left wall; front wall and back wall. In which side are there windows? How many? In which doors? What stands on the floor of the school-room? What hangs on the walls? How long and how wide is

the school-room? (To be measured by steps.) How many seats, desks, tables stand in the room? (Drawing of the floor, or of one of the walls, on the blackboard before the class.) Observation, description, and comparison of various things in the school-room. For example: Of doors, windows, table, slate, chalk, sponge, etc. Make drawings of some of them. In observing the windows, the children are to look out and tell what they see.

The School-yard.—There is a yard to our school house. On which side or how many sides is it? It is long and wide. How long and how wide? (Measured by steps.) What surrounds it? What can you see standing or lying in the yard? What is the use of what you see? How do you go from the school-room into the yard? How many steps of stairs from the hall into the yard?

The Sun.—Does the sun shine to-day? Where is the sun? Does it always stand still in the same place? What does it do in the morning? In the evening? When is the sunshine warmest? How does the sun look? Does it shine every day? When does it shine? Where does it rise—set? Point where with your hand. Say aloud: morning, *east*—evening, *west*. Where is the sun at noon? Point where. We say that direction is towards the *south*. In what direction does the sun rise—set—stand at midday? The sun moves in the sky from east to west. It does not move in a straight line, but in a curved line. (Drawing.) The direction opposite south is called *north*. Repeat the four points of direction.

The Moon.—Can we see the sun in the sky at night? Then we see the moon and the stars. Do we see them every night? How does the moon look? Does the moon also give warmth? Does it also rise in the east and set in the west? (Told to look at it in the evening.) Comparison between the sun and the moon.

The Stars.—When do we see the stars? Can we see them every evening? Do they look as large as the sun or the moon? How many stars are there in the sky? Are they all equally bright? Do they give warmth like the sun? Are there stars in the sky by day also?

Water.—(For a rainy day.) Look out of doors. It is raining. The rain is water. It falls in drops. How many drops are there? Where do they come from? Do the drops always remain on the ground? The rain wets. What, for example? Does it rain every day? Has it rained much to-day? How long is it going to rain? Look into the street—yard. You see the water standing there in several places; those are puddles; we will see if they are still there this afternoon or to-morrow. They are there no longer; what has become of them? We also have water here in the room; what is it in? Who brought it? Where was it brought from? (Something more about the well, pump, or water-pipes.) A glass filled with water. Properties of water observed: fluid, transparent, colorless, tasteless, odorless. Can the water be made warm or hot? How? Can't it also be made solid? What is it then called? When does water become ice? Water falls from the sky as rain; it rises out of the earth; but it also flows on the surface of the earth. Do you know any large body of water near us?

Clouds.—Look out of doors. What is the sky covered with? How do the clouds look? Are they solid? Towards what direction are they moving? When it rains, snows, or hails, are there always clouds in the sky? Rain does not fall from all clouds. What is the color of the clouds we now see? What other colors do we sometimes see in

clouds? What colors do we usually see in the clouds at sunrise and sunset?

Wind.—How do we perceive the wind? Can we see it or hear it? What is the wind? Strike the air with your handkerchief, you feel a blowing—that is wind. East, north, south, west wind. What do we call a very strong wind?

Rainbows.—You see a rainbow in the skies. It is of different colored stripes. There are seven of these: a red, an orange, a yellow, a green, an indigo, and a violet stripe. The red is on one edge, the violet on the other edge, and the green in the middle of the rainbow. When our face is towards the rainbow, the sun is behind us. We can sometimes see the color of the rainbow in a water-bottle, in the water of a fountain, or in water falling over a mill-wheel. (The teacher will find it an advantage to have strips of paper of the seven colors, and exercise the children in arraying them in proper order; the child thus early acquires a correct knowledge of colors.)

The School House.—When possible, observe all four walls from without. How many windows? How many rows, one above the other? (Stories.) What is the shape of the windows? Of what are the walls made? The roof? How many chimneys? Is there a door in the side of the building? What else is there on this side? On which side does the sun shine in the morning? In the afternoon? On which side does it shine little, or not at all? East, west, north, south sides. What is within the school house? Hall, class rooms, etc. How many class rooms? Who can tell me of any other school house in the city or town?

Classes and Teachers in the School.—What is the name of our school? You are all in one class, which class is this? How many classes are there in the whole school? This room is our class-room. Is it on the ground floor or first story—in the second story, or third? Comparison may be made between the school house and some neighboring building.

The People who build houses, and what materials they must have.—In building a house the following people work: masons, carpenters, locksmiths, glaziers, roofers, plasterers. What do masons do? The carpenters? etc. What do the masons use? The joiners? What parts of the house are built of stone? brick? wood?

Snowy Day in Winter.—Look out of doors. What is falling from the sky? That is snow, and we say it falls. Does the snow fall in drops like water? It falls in flakes. It is white. It remains lying on the ground. When the weather becomes warmer the snow melts; then it becomes water. Why does it snow in Winter and not in Summer? What do boys do with snow? Can we ride on the snow? How can we ride on the snow?

Ice.—It is very cold out of doors; it has frozen. The water is covered with a sheet of ice. Does the ice fall from the sky like snow? Why does not water become ice in Summer?

People who Furnish us with Food.—Butchers with meat, bakers with bread, millers with flour, gardeners with vegetables and fruit, grocers with sugar, salt, coffee, etc., fishermen with fish, brewers with beer, etc. Particulars in regard to each; for example, where does the butcher get his meat? From the animals that are slaughtered. What animals are slaughtered? Where are they slaughtered? Where in the city do we find meats for sale? Where are vegetables raised? Where sold? Name vegetables you have seen in the market. Conclusion: What food do we obtain from animals—what from plants?

People who Furnish us with Clothing.—Who provides you with your clothing? Do your parents make it themselves? Of whom do they get your clothing? To make clothing we must first have something of which to make it. Of what do we make clothing? In what kind of stores do we buy materials to make clothing? Name some of the stores. We can also buy many kinds of clothes ready-made; name such garments. Clothing must be kept clean; shirts, stockings, etc., often washed. Laundries.

Care of Health.—Who of you has ever been sick? Whom did your parents send for to make you well again? What did the doctor do when he came? Where did the doctor come from? Where is there an apothecary? When you were sick you staid in the house and your parents took care of you; but is there no place for people who are sick and have no home to stay in, and no one to take care of them? Have you ever seen a hospital? Where? Do you know of any other hospitals?

Trade.—Many people who buy things to sell, have stores; these people are called merchants, traders, storekeepers. Tell me some stores near where you live. (Signs, firms.) What do we buy in a grocery store? In a clothing store? To buy we must have money. Coins and paper money. (Show different coins.) Of what metals are coins made? What is the building called where money is made? Did you ever see a mint? Where? What kind of a building? What banks do. What brokers do.

Street where the school is situated.—On what street is our school? It is long and wide; how many steps wide? How long? Is it straight, or somewhat crooked? Is it level, or somewhat hilly? (The general direction in which it runs.) Is it planked or paved? How many stones does it take to pave a street? They cannot be counted. The middle of the street is higher than the sides; why? The water runs off in the gutters; does it run up or down? On both sides of the street are narrow walks for people; these are called sidewalks. In the streets we meet carriages, men, and animals; what kinds of animals? On both sides of the street stand houses; there are two rows of them; see if there is anything else to be seen in the street. Posts—on top of the posts, lanterns—within the lanterns, lights. The streets are lighted at night; why? We find trap-doors of wood or iron in the streets; what are they? Conclusion: Ask individual scholars on what street they live, through what streets they come to school.

Different kinds of carriages seen on the streets.—Names of different vehicles. Difference between a car and a carriage. Name different parts of a carriage.

Public Squares or Parks.—Where is the nearest public square? How many steps long is it? What is in the square? What is it for? (Drawing.) Other squares or parks.

A Ranch or Farm.—A ranch or farm is a large place, and on it we find many things; wagons, wheelbarrows, plows, harrows. We also see many animals—hens, ducks, geese, etc. There are also several buildings. There is a dwelling house; there is another building with large doors and no windows; that is a barn, where hay and grain are kept; sometimes there are places for the horses and cattle in the barn; sometimes there are sheds near for them. There are cows and calves, oxen, horses, and swine. What are all these animals for? The cows are to give milk, the horses to draw the wagon and the plow, the oxen and the swine to be fattened for slaughter. The oxen must also draw the plow, harrow, etc. There are also many people on a ranch—boys, girls, and

laborers. What do they do? They have to feed the cattle, to milk the cows; (what is done with the milk, who takes care of it, and what we call the place where it is kept); they have to manure the fields, to plow the ground, to sow seed, to harvest, and thrash. We call such people *farmers* and their work *farming* or *cultivating the soil.*

Fields.—Plow-land, tilled land, or fields is land that is plowed every year once or several times. The land is plowed with a plow; the plow cuts the surface of the earth into narrow strips and turns them over; the cuts or hollows made are called *furrows.* The earth must not only be plowed but harrowed also; the harrow covers the seed with earth, and breaks up the clods. The seed is sown either with the hand or with a sowing machine. The seed that is sown is not to lie in the earth but to spring up, grow, and bear fruit. The field is manured in order to make the seed vigorous and healthy. Kinds of seed sown. Harvesting, season, and manure.

Neighboring Bodies of Water, (rivers, bays, lakes, etc.,) Bridges, etc. A River.—The *name.* The water of a river flows in a hollow channel of earth; and this hollow is called the *bed* of the river; the borders of this bed, that is, the land at each side of the river, are called the *banks* or *shores* of the river. The river is as *wide* as the distance from one of the banks to the other; if there is a bridge across the river we can tell how wide the river is by measuring the bridge. The river is also *deep* as well as wide; its depth is the distance from the surface of the water to the ground below. The ground at the bottom of the river is uneven, like the ground around us, so that in some places it comes nearer to the surface of the water than in other places; of course the water is not so deep in such places and these are called *shallows* or *shallow water;* places where the water is so shallow that we can wade across or cross with a horse, are called *fords.* Sometimes the bed of the river is so hilly that the top of these little hills rise above the surface of the water; these hill tops are entirely surrounded by water and are called *islands.* A river has not always the same width and depth; when there is but little or no rain for a long time the river is narrow, more shallow, and the water more clear; in heavy rains or after heavy rains the river becomes swollen, that is, it becomes wider and deeper; it rises higher in its bed and the water becomes less clear. Sometimes the bed of the river becomes so full that it cannot contain all the water of the river; the water then rises above the banks and flows over the land; we then say the river has overflowed its banks, or has flooded the country. When the weather in Winter is cold enough, the surface of the water becomes frozen and forms ice; sometimes the ice is so thick that people can walk and skate upon it; sometimes the water freezes to so great a depth that the ice becomes thick and strong enough to bear heavy loaded teams. What kind of animals live in the river? What use do we make of the water in the river?

Shipping (vessels and boats).—There are several kinds of vessels in which we can travel on the water. (Examples. A general description of the shape and different parts of a vessel, but no details.) People whose business it is to sail vessels on the water are called sailors, boatmen, etc. The forces which move vessels are the currents of water, steam, horses, wind, and the human hand. The means through which the forces work are steam engines, ropes, sails, masts. Different ways of traveling. Which is the easiest, quickest, slowest; why? Ships are usually loaded with different things, viz., wood, stone, coal, wheat, etc. This is called the *cargo* of the ship. A *wharf* is a place on the shore or

bank of a body of water, to which vessels can be made fast, while they lade and unlade their cargoes. Places near the water where vessels are built or repaired are called *ship yards.*

Bridges (*railroad and river bridges*).—For what purpose are bridges? Of what built? Difference between a railroad bridge and one made for teams and foot passengers. How supported from below. How ships pass through a river bridge.

A Railroad.—A railroad is a road built of iron rails; there are two rows of these rails, and they are at all points equally distant; these two rows of iron rails are called the track. The carriages which roll on these tracks are called *cars;* several cars joined together are called a *train;* at the head of a train is a steam carriage which we call the *locomotive.* The locomotive moves by means of steam from boiling water, and when the locomotive moves it draws the train with it. There are *passenger* trains and *freight* trains; express trains and accommodation trains. (Explain difference.)

Journey on a Railroad.—Who of you has ever made a railroad journey? What railroads did you travel on? Let us imagine or play that we are going on such a journey. Some one may tell me what railroad we will go on. Way to the railroad station. Where? Buying tickets. Waiting in depot. Signal for taking our seats in the car. People whose business it is to take care of the train; conductor, brakeman, engineer, fireman; their duties. Signal for starting. Motion of train, first slow, gradually faster. How to stop train. Places where a train stops called *stations.*

Herewith I close the chapter on material for local geography in its primary steps, that is for the first two school years; I herein lay claim, however, neither to a complete selection of subjects, nor to an exhaustive treatment of them; I have rather sought to indicate the method of handling them. In regard to changes in the sky and atmosphere, I would add that these are not merely to be observed once but many times in the course, the time being selected according to the actual presence of the phenomena to be observed. In addition to the four main points of the compass, the second year may include four intermediate points, northeast, etc., observing the difference in direction, Summer and Winter, of the point of the sun's rising and setting.

III. Higher Local Geography.

By means of the preceding instruction in local geography the children have not only cultivated their faculty of sense-perception, but have also acquired a knowledge of many local facts and various phenomena. In accomplishing this no systematic method has been followed, but the most favorable opportunities for observing separate phenomena, particularly such as are transitory and fleeting, have been improved. The seasons of the year have here greatly served as guides. Also, in groups of similar objects, one has been selected as a representative of all for observation and study; for example: one street, one public square, one church, one body of water, etc. In this way the child has been led to perceive and take cognizance of the essential characteristics of all such objects.

But, in its higher steps, local geography can no longer occupy itself with the consideration and description of single objects; it has rather to

endeavor to bring to view order in the manifold and varied forms and phenomena in the world of home, by associating and grouping together things similar in nature. In no other way would it be possible to accomplish the final task of local geography, viz: to create a complete mental picture of the locality studied, and its various features and phenomena.

Hence it now follows that instruction in local geography, in its advanced steps, must follow a fixed system, which is quite foreign to the nature of sense-perception instruction. The reviewing in the third year of much which has come under notice in the primary steps of the study, will be but more conducive to the accomplishment of this purpose.

As an object of instruction, I should divide the subject into two parts:

1. Its changing and changeable phenomena, or the department of observation.

2. The fixed and unchangeable features, the department of consideration and reflection.

The two parts of the course of instruction do not succeed one another, but rather the first mingles itself incessantly with the second, in every season of the year. It comprises chiefly phenomena of the sun, moon, stars, and atmosphere. Let us draw nearer to this matter.

1. THE LOCALITY OF HOME IN ITS CHANGING PHENOMENA—DEPARTMENT OF OBSERVATION. (*a.*) *The Sun.*—In the heavens we see the sun by day, the moon and stars by night. Always? Do we not often see the moon by day also? These, together, are called the heavenly bodies. The sun appears to be the largest among them; it moves from east to west, in a curved line, bending towards the south. From morning to noon-day it ascends; from noon to evening it descends. The highest point reached is at noon. In the sunshine all non-transparent bodies throw a shadow. Observe the shadow of such a body—your arm, for instance—at morning, noon, and evening, taking notice of its direction and length. Result: the shadow always lies in the direction opposite to the sun—in the morning toward the west, at noon toward the north, at evening toward the east It is smallest at mid-day, largest morning and evening. From morning to noon it decreases gradually in size—from noon to evening it increases. It describes a curve line from west to east, bending toward the north, in a manner directly opposite to that of the sun. Repeat these observations and descriptions frequently in the course of the year. At different times mark points of rising and setting of the sun; also, its height at mid-day. The days of Spring and Autumn, as well as of Summer and Winter, are not to be allowed to pass unnoticed. At last we shall reach this result: The sun does not always rise and set at the same points in the horizon. At the beginning of Spring and Autumn it may be said the sun rises exactly in the east, and sets exactly in the west; these points are to be marked—also the time of rising and setting. Till the beginning of Summer it rises and sets continually farther and farther toward the north. It also rises continually earlier and earlier, and sets later and later. At mid-day it ascends continually higher and higher—the shadow becomes shorter and shorter. The line it describes is always an increasing curve. From the twenty-first of June all this is reversed. On that day the sun rises furthest at the northeast, and sets furthest at the northwest. That is the day of its earliest rising and latest setting; at noon of that day it reaches its highest point in the heavens; the shadow of the body is then smallest; the curve the sun describes in the heavens the largest.

Continuing observations of this nature during the remaining part of the year, and especially at the beginning of Winter, similar facts will be developed in regard to the sun's rising and setting, the height and length of the curve it describes, length of shadow at noon-day, etc. The tropics can here be well explained. Difference of temperature at different parts of the day, and at different seasons of the year.

(*b.*) *The Moon.* (*c.*) Observation of the stars. (*d.*) Observation of weather.

2. THE LOCALITY OF HOME IN ITS UNCHANGEABLE FEATURES.—*Department of Consideration and Reflection.*—It is impossible to make the division of the phenomena to be observed entirely distinct; the department of reflection and consideration must comprise much that is not fixed and unchangeable; for instance, animated nature as represented in the animal kingdom. Life is motion, and all motion to be learned must be observed. Since, however, the animal kingdom in its motion and activity, and the vegetable kingdom in its development, belong to a fixed locality, we therefore, in this case, combine observation with consideration and reflection. For convenience we shall select San Francisco for illustration of this department.

(*a.*) *General View of San Francisco.*—The place where we reside, where our school house stands, is named San Francisco. San Francisco is called a city. A city is an incorporated town governed by a Mayor and a Board of Supervisors or City Council. San Francisco is situated on the west side of San Francisco Bay; directly opposite on the eastern shore is Oakland; San Francisco also lies on the southern shore of the Golden Gate; Saucelito is situated on an inlet of the opposite northern shore, and lies a little west of north from San Francisco.

(*b.*) *Streets.*—The city contains many streets. Each of you may tell me the name of some street. Market street is one of the longest and widest; its commencement is at the water's edge, about two thirds of the distance from Meiggs' Wharf to Rincon Point; from there it extends in a straight line, its direction being northeast and southwest. Most of the streets lying north of Market street run at right angles to each other, their direction being nearly north and south, east and west; south of the line of Market street, the streets run in various directions and at various angles. Market street is one of the business streets of the city. Let us see how many different kinds of business located on Market street you can mention to me. What public building? What other large buildings? Van Ness Avenue is also a very wide street. It commences at Market street and extends to the water's edge, which it reaches in the vicinity of Black Point. Van Ness Avenue runs north and south, and Market street northeast and southeast; it therefore lies in a diagonal line to Market street Does it then form a right angle with Market street? Does it run parallel to Market street? Can you tell me what kind of buildings we find on Van Ness Avenue? Is it a business street? Point Lobos Avenue is another very wide street; it commences at Laurel Hill Cemetery, or Lone Mountain, and extends in a westward direction to the Pacific Ocean, which it reaches just south of Point Lobos; Point Lobos forms the southwestern boundary of the Golden Gate. Point Lobos Avenue runs in an easterly and westerly direction; is it then parallel to Van Ness Avenue? To Market street? How many of you have been on Point Lobos Avenue? Did you see as many business places as on Market street? As many private residences as on Van Ness Avenue? Did you meet any heavily loaded business teams? What rocks are in the Pacific Ocean opposite the end of this road? What animals live on

dwelling in a city, but, besides these are also many animals. Let us first speak of the latter. Many of these are of use to man; they are sheltered, fed, and cared for by man; such are called domestic animals. Here mention of some is to be made and some questions in regard to their form and appearance; then questions like the following: What people use horses? For what do they use them? In the city we see many horses but few oxen, cows, calves, swine or poultry; all the latter we usually find in greater numbers outside of the city. There may be many oxen, calves, and swine, and much poultry brought into the city, but only to be slaughtered. Name different domestic animals and the special use to which each is put. Some animals are also merely for our amusement; for example, some kinds of dogs, birds, as canaries, parrots, mocking-birds, etc.; also gold-fishes. There are places of amusement for the public, called zoölogical gardens; these contain a collection of a great variety of animals. Who of you have ever been in such a garden? Name some of the animals you saw. Many of these are brought from foreign lands; the men who take care of them are called their *keepers*, and they feed the animals and take care of them. These animals are kept, not for mere pleasure, but also that we may see and learn about the animals of foreign lands. There are also many animals at large in the city who find food and shelter for themselves; for instance, birds, rats, mice, flies, etc. 2. *People Dwelling in the City.*—The most important inhabitants of a city, however, are the *people* who dwell in it. In San Francisco, in eighteen hundred and seventy-two, there were one hundred and seventy-eight thousand two hundred and seventy-six inhabitants; of these, five thousand were what is called a floating population, that is, they have no permanent homes in the city, but live in hotels, hospitals, almshouses, etc.—or they call San Francisco their home, but spend most of their time making short voyages along the coast, bay, or rivers. Counting the number of people in the city, county, country, etc., is called "taking the census." This is a very old custom among nations, for we read in the Bible that the ancient Hebrews and their families were numbered by sex and age; and the most ancient record of a census that we possess is the enumeration, by Moses, of the people in the wilderness. The inhabitants of a place differ in age, wealth, religion, etc. According to age, they are divided into adults, and those who have not yet reached the age of eighteen or twenty-one years. Are you an adult? In regard to wealth, we find people of every degree, from extreme and helpless poverty to immense wealth. The rich have to help provide for the poor; this they do partly by the taxes which they pay to the Government, partly by establishing charitable and other societies, and also in more direct ways. When you no longer go to school, each of you will find something to do among your fellow men; for instance, what will *you* do? and you? etc. Thus each of you will follow some calling, that is, some pursuit, business, or profession—a certain department of labor, by which you will support yourselves and acquire property. The wealth which one possesses is called his property. Some of you will become farmers; where will those live and what will they do? Some will become mechanics; tell me some things which a mechanic makes. Some will be manufacturers; how many kinds of manufactories can you name? There are also many tradesmen or merchants, who buy and sell various kinds of wares and goods. A trader or merchant usually has on the outer wall of his store a sign, on which is his name and the kind of goods he buys and sells; often two or more per-

sons unite in some business; this is called a partnership, and their names together is called the name of the firm or house. Merchants have others to assist them, and these are called clerks, bookkeepers, cashiers, etc. A city where there are many merchants is called a commercial city; where there are many manufactories, a manufacturing city. Besides mechanics and merchants, there are also many other people—painters, musicians, singers, physicians, municipal officers, clergyman, lawyers, teachers, etc. Many people work the whole year in the streets; these are coachmen, teamsters, and other drivers, etc.; others work in gardens and are called gardeners; and still others work on the water, as fishermen, boatmen, etc. All the kinds of business we have mentioned are usually followed only by men. Women also have to work to support themselves and to acquire property; let us see how many kinds of business are usually followed by women. The inhabitants of a city also differ in religion; there are Protestants, Catholics, and Hebrews, or Jews. These different churches have schools to which children go once a week; what are such schools called? Are the pupils taught the same things that they learn in their day schools? Some of these churches have day schools also for children; can you tell me where there is one such school? Besides the inhabitants who have their home in any certain place, there are also people who come to that place to remain for a short time, sometimes for business and sometimes for pleasure; what accommodations are provided for these people whom we call travelers? Let us name several hotels and tell on what streets they are situated.

3. *Relation of individual Municipalities to the whole country.*—As the different classes in a building constitute together one school, so a city and the surrounding towns and country constitutes a county; many counties are united in one State; many States united form our country. For the government of every *city* there is a Mayor and Common Council, Board of Aldermen or Supervisors; of every *State* there is a Governor and Legislature; of the *country* the President and Congress. These officers are chosen from among the people once in a certain number of years. The Mayor of a city dwells in the city; the Governor of a State in the capital city of that State; the President of the country at the National Capital. Who is the Mayor of our city? For how long is the Mayor elected? When was the present Mayor elected? When will his term of office expire? What city is the capital of the State in which we live? Who is President of our country? For how many years is the President elected? When was our President elected? When does his term of office expire? What city is the National Capital? Where is it situated? How far and in what direction from us? For the government and good order of cities, counties, States and country, much money is needed; this money is furnished by *taxes* which are paid to the government by the people; the rich have to pay large taxes, while the poor have but small taxes to pay.

The fourth or fifth steps introductory to the study of general geography, treat of the history of the county or city, and then of the State.

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5. In the old course, no special attention was required to be given to instruction in language till the sixth school year. Then grammar was introduced by means of a text book, and composition by means of

written exercises. In the revised course, instruction in language is required to be given from the first school year on:

FIRST SCHOOL YEAR.—The pupil to be required to answer and speak in complete sentences. Spontaneous expression of the pupil's thoughts to be encouraged. Systematic correction of common faults in the use of language to be commenced in this, and continued through all succeeding divisions.

SECOND SCHOOL YEAR—*Composition.*—At first merely imitative. Copying words and sentences printed on the blackboard by the teacher. Use of period at end of every sentence, and use of capital in first word of every sentence. The children are to be encouraged to write sentences of their own as soon as the number of words learned will permit. Just as soon as a few names of objects, a few words expressive of quality, and a few words of action are learned, so that they can be read and written, let such objects be exhibited and such actions performed in the presence of the child as shall require, in description or narration, the use of the words learned. Great care must be taken not to make these exercises so difficult as to discourage the children. Spontaneous efforts, even the rudest, should be freely praised.

THIRD SCHOOL YEAR.—*Composition.*—Writing sentences containing given words. Pupils to describe the pictures in their Reader, and to be encouraged to tell what they show. Short descriptions derived from these pictures and from object lessons. Accounts of things done. Every child in this division should be able to write his own name, the name of his teacher, and of the nearest Post Office. Systematic exercise in the use of *have, do, be, see,* and in correction of common faults in the use of the same. The work of the term or year should make the pupil acquainted with the use of the capitals for the pronoun I, and in the beginning of sentences, in the names of persons, days of the week, the month; also, the use of the period and the interrogation mark.

FOURTH SCHOOL YEAR.—*Composition.*—Writing sentences containing words selected from the reading lessons. Descriptions derived from object lessons and pictures. Narration of actions performed by the teacher and by the pupils under the direction of the teachers. Punctuation marks as needed.

FIFTH SCHOOL YEAR.—*Composition and Oral Grammar.*—Writing sentences containing nouns, verbs, and adjectives, and selecting the same from the Reader. Writing sentences predicating actions and qualities of given objects, selecting words from the Reader which denote action and quality. Predicating action in time past, present, and future; introducing modifiers of the verb (adverbs) to tell where, how, and when. The adverb.—Selecting words from the Reader which denote action present, past, and future. Composition based on object lessons and geography lessons. Use of punctuation marks.

SIXTH SCHOOL YEAR.—*Composition.*—Exercises in narration. Descriptive exercises to be commenced. Geography lessons and object lessons will furnish abundant material. Letter writing. Use of punctuation marks. *Grammar.*—Oral deduction of rules for changing nouns from singular to plural. Distinction between the forms of the adjectives denoting different degrees of quality. Subject and predicate to be introduced. Selection from the Reader of the parts of speech already introduced. Personal pronouns, conjunctions, and interjections. Synthetic exercises, embracing modifications of subject and predicate, to be introduced as rapidly as the progress of the class will permit. Person and gender of nouns and personal pronouns.

SEVENTH SCHOOL YEAR.—*Composition.*—Narrative and descriptive exercises extended. Letter writing from pupil to pupil, pupil to teacher, and pupil to parents and absent relatives on the business and lessons of the school. Manner of addressing letters. *Grammar.*—Synthetic exercises; the subject modified by words and phrases. The predicate modified by the same. The adjective and adverbial element to be modified. The verb—transitive and intransitive. The objective element. Introduction of case. Regular and irregular verbs. The clause to be introduced. Selections from the Reader of all the parts of speech. Verb—active, passive, and neuter. Tense. Analysis of simple sentences. The subject a word, phrase, and clause; the predicate a noun, an adjective, a verb. Use of Brown's First Lines of English Grammar, to page 74, at option of teacher.

EIGHTH SCHOOL YEAR.—*Composition.*—Narrative and descriptive exercises extended. Business letters may take the place of other letters. *Grammar.*—Brown's First Lines completed.

The principal changes made by the revised course have now been considered. The course as it now stands is not claimed to be perfect, nor even what the wants of popular education require, but it is the best course which could be introduced in the present condition of our schools and the teaching profession. It is one step towards rescuing our schools from that text-book system whose highest realization can only insure to the pupil an acquisition of the "realized wisdom of the race," and which usually realizes only the "text-book-crammed pupils leaving school with disgust for books." The revised course recognizes that the child's destiny is activity, as Froebel expresses it; and a child must conquer knowledge, discover facts and truths for itself, though the facts and truths be known to the world since the dawn of the human intellect. The child, in order to acquire intellectual power, must exercise intellectual power, and not be a mere passive recipient. The mastery of the printed page is one of the objects in school education, but the most important object is to teach the child how to gain a mastery of the knowledge inscribed on the page of every-day life.

As far as the revised course has been introduced it has obtained general approbation, and "it is credited with being more rational and better calculated to enlist the thinking faculties of pupils than the system it will supplant." In the Eastern States the course has been highly commended. Some of our California cities have incorporated its most important features into their course of studies.

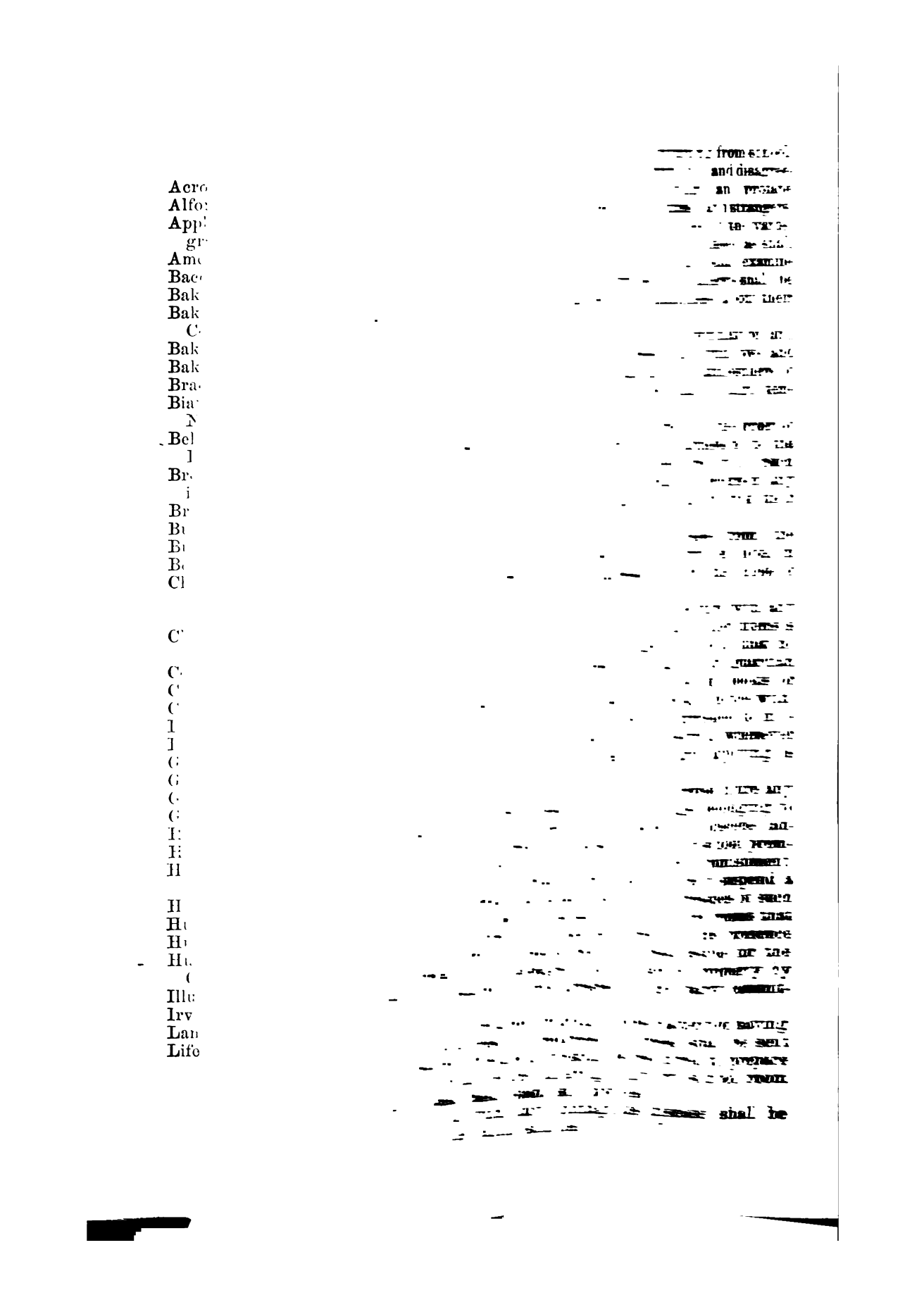
Appended is a list of the text books required to be used in the public schools of California. Then follows a list of the library books adopted by the State Board of Education, March fifteenth, June thirteeth, eighteen hundred and seventy-one, and December thirteenth, eighteen hundred and seventy-two.

LIST OF TEXT BOOKS.

READING.—McGuffey's Series, with Charts; Willson's Charts, where already in school.

ARITHMETIC.—Robinson's Progressive Primary, Rudiments, Practical, and High School; Colburn's Intellectual.

SPELLING.—Willson's Spellers; Swinton's Word Analysis.



RULES AND REGULATIONS OF THE PUBLIC SCHOOLS OF CALIFORNIA.

[Adopted by the State Board of Education, in accordance with subdivision one of section fifteen hundred and twenty-one of the Political Code, and required to be enforced in all public schools, according to subdivision one of section sixteen hundred and ninety-six of the Political Code.]

SECTION 1. Teachers are required to be present at their respective school rooms, and to open them for the admission of pupils, at fifteen minutes before the time prescribed for commencing school, and to punctually observe the hours for opening and closing school.

SEC. 2. Unless otherwise provided by special action of Trustees, or Boards of Education, the daily school sessions shall commence at nine o'clock A. M., and close at four o'clock P. M., with an intermission at noon of one hour, from twelve M. to one P. M. There shall be allowed a recess of twenty minutes in the forenoon session, from ten-forty to eleven o'clock, and a recess of twenty minutes in the afternoon session, from two-forty to three o'clock. When boys and girls are allowed separate recesses, fifteen minutes shall be allowed for each recess.

SEC. 3. In graded primary schools, in which the average age of the pupils is under eight years, the daily sessions shall not exceed four hours a day, exclusive of the intermission at noon, and inclusive of the recesses. If such schools are opened at nine o'clock A. M., they shall be closed at two o'clock P. M. In ungraded schools, all children under eight years of age shall be either dismissed after a four hours' session, or allowed recesses for play of such length that the actual confinement in the school room shall not exceed three hours and a half.

SEC. 4. No pupil shall be detained in school during the intermission at noon, and a pupil detained at any recess shall be permitted to go out immediately thereafter. All pupils, except those detained for punishment, shall be required to pass out of the school rooms at recess, unless it would occasion an exposure of health.

SEC. 5. Principals shall be held responsible for the general management and discipline of the schools; and the other teachers shall follow their directions, and coöperate with them, not only during the school hours, but during the time when the pupils are on the school premises, before and after school, and during recesses. Assistants shall be held responsible for the order and discipline of their own rooms, under the general direction of the principals.

SEC. 6. Teachers are particularly enjoined to devote their time faithfully to a vigilant and watchful care over the conduct and habits of the pupils during the time for relaxation and play, before and after school, and during the recesses, both in the school buildings and on the play grounds.

SEC. 7. It is expected that teachers will exercise a general inspec-

2. Teachers shall daily examine the lessons of their various classes, and make such special preparation upon them, if necessary, as not to be constantly confined to the text book, and instruct all their pupils, without partiality, in those branches of school studies which their various classes may be pursuing. In all their intercourse with their scholars they are required to strive to impress on their minds, both by precepts and example, the great importance of continued efforts for improvement in morals, and manners, and deportment, as well as in useful learning.

3. Teachers should explain each new lesson assigned, if necessary, by familiar remarks and illustrations, that every pupil may know before he is sent to his seat what he is expected to do at the next recitation, and how it is to be done.

4. Teachers should only use the text book for occasional reference, and should not permit it to be taken to the recitation to be referred to by the pupils, except in cases of such exercises as absolutely require it. They should assign many questions of their own preparing, involving an application of what the pupils have learned, to the business of life.

5. Teachers should endeavor to arouse and fix the attention of the whole class, and to occupy and bring into action as many of the faculties of their pupils as possible. They should never proceed with the recitation without the attention of the whole class, nor go round the class with recitation always in the same order or in regular rotation.

6. Teachers should at all times exhibit proper animation themselves, manifesting a lively interest in the subject taught; avoid all heavy, plodding movements, all formal routine in teaching, lest the pupil be dull and drowsy, and imbibe the notion that he studies only to recite.

RULES FOR DISTRICT LIBRARIES.

1. The Librarian appointed by the Trustees shall properly label and number each book in the district library, and keep a catalogue of the same, showing the title and number of each book.

2. The library shall be open for drawing and returning books [here insert such time as may be determined by the Trustees and Librarian.]

3. Every child attending school shall be entitled to the privileges of the library; but when the number of books is insufficient to supply all the pupils, the Librarian shall determine the manner in which books may be drawn.

4. No person shall be entitled to two books from the library at the same time, and no family shall draw more than one book while other families wishing books remain unsupplied.

5. No person shall loan a library book to any one out of his own house, under a penalty of fifty cents for each offense.

6. No person shall retain a book from the library more than two weeks, under a penalty of ten cents for each day he may so retain it; and no person may draw the same book a second time while any other person wishes to draw it.

7. Any person losing or destroying a library book shall pay the cost of such book and a fine of fifty cents; and any person injuring a book by marking, tearing, or unnecessarily soiling it, shall be liable to a fine of not less than ten cents, nor more than the cost of the book, to be determined by the Librarian.

8. Any person refusing or neglecting to pay any penalty or fine, shall not be allowed to draw any book from the library.

9. The Librarian shall report to the Trustees, quarterly, the amount of fines imposed and collected, and the amount received for membership dues; and all moneys accruing from these sources shall be expended for the purchase or repair of books.

10. Any person, other than pupils attending, resident in the school district, may become entitled to the privileges of the school library by the payment of an admission fee of one dollar, and a monthly membership of twenty-five cents.

11. Any person resident in the district, who shall pay to the Trustees the sum of ten dollars, shall be entitled to a life membership privilege of the library.

12. The Librarian shall report, annually, to the District Clerk, on or before the tenth day of July, the number and condition of books in the library, the number and titles of books received by donation, the number and titles of books purchased, the amount of State School Library Fund expended, and the amount derived from fines and membership fees.

STATE BOARD OF EXAMINATION.

QUESTIONS PREPARED FOR THE USE OF COUNTY BOARDS.

GENERAL QUESTIONS.

1. Write your name in full; number in examination; age; nativity; place of residence.
2. Are you an applicant for a State Certificate, and if so, for what grade?
3. In what schools were you educated; how long did you attend each?
4. What certificates do you hold?
5. What references in respect to teaching?
6. What letters of reference in respect to moral character?
7. In what places and in what kinds of schools have you taught? How long in each? How long in all?

RULES AND REGULATIONS.

1. No communication.
2. No use of books during examination.
3. Write your name on one of the cards given to you, for the examiner, and keep the other to enable you to remember your number in examination.
4. Write on only one side of each sheet of paper, number your pages, leave a margin, divide into paragraphs, and do not crowd your words. Paper is cheap; write in a large, legible hand, and thereby save the examiners much vexation of spirit, and yourselves some extra credits.
5. If you find a question that puzzles you, do not waste time in worrying over it, but pass over to the next, and return to it after you have answered the others.
6. Do not hurry; do not worry; do not get excited and nervous, but quietly write all you know about the subject.
7. In Arithmetic, separate every operation by ruled lines across the page, or by a blank space. Make large figures, and do not mix up operations.

8. In Grammar, use the briefest forms of parsing and analysis; and do not waste words on details. Any school grammar, ancient or modern, or antediluvian, will be recognized as authority.

9. Do not attempt to "cram" for the examination, for it will only confuse you.

[JUNE, 1872.]

WRITTEN ARITHMETIC.

One hundred credits. Ten questions, ten credits each.

FOR FIRST AND SECOND GRADE CERTIFICATES.

No credits allowed unless the answer is exactly right, and the work put down in full.

1. Upon what principle is cancellation based? Illustrate.

2. To reduce a common fraction to a decimal, why do you divide the numerator by the denominator? Illustrate.

3. In dividing one fraction by another, why do you invert the terms of the divisor? Illustrate.

4. How would you find the least common multiple of two or more fractions?

5. The longitude of Stockholm is 18° 4′ 30″; the difference in time between Stockholm and a certain place in the United States, is 6 hours, 53 minutes and 45 seconds; what is the longitude of the latter place?

6. Write a note drawn at ninety days, so that when discounted at bank, at ten per cent, the amount received shall be $1,500. Write a receipt.

7. Define the terms ratio and proportion, and derive two proportions from the fraction $\frac{3}{4}$.

8. In extracting the square root, why do you point off the number into periods of two figures each?

9. The base of a right-angled triangle which contains 339.864 square rods, is three times its altitude, what is its hypothenuse?

10. Construct a geometrical series of which 12 is the first term and [illegible] the fifth.

THIRD GRADE ARITHMETIC.

[illegible] hundred credits. *Sixteen questions, six credits each.*

[illegible] unless *the answer is strictly correct, and the full operation accompanies the same.*

[illegible] the sum, difference, and product of .025 and .0002, and the [illegible] least decimal divided by the first.

[illegible] sum, difference, and product of $\frac{7}{8}$ and $\frac{7}{12}$, and the quotient [illegible] divided by the last.

[illegible] feet long, 44 feet wide, and 20 feet high; how far is it [illegible] the floor to the corner on the floor diagonally op-

4. A broker hires at a bank $500 for 90 days at 1½ per cent a month; for how much must he give his note?

5. What is the commercial discount on a bill of goods for $4,500, sold on 90 days time, 5 per cent off for cash?

6. What is the interest of $500 for 112 days at 10 per cent a year?

7. A milliner sells a bonnet for $18, and loses 33⅓ per cent; what did the bonnet cost?

8. 63 is 64 per cent of what number?

9. This year a teacher's salary, $900, is 12 per cent more than it was last year; what was it last year?

10. What is the rate of speed on a railroad train that runs 120 miles in 4 hours and 13 minutes.

11. How many yards of paper will it take to cover the wall of a room, 20 by 18 feet, deducting two doors, each 6 feet by 2½ feet?

12. Divide 44 rods 7 feet by 22 rods 3 feet 6 inches.

13. Divide $\frac{5}{8}$ by $\frac{3}{7}$, and write out an explanation of the reasons of the method.

14. Multiply 1,728 by $\frac{5}{1\frac{1}{2}}$ and write out the analysis.

15. Divide 739 by 2, and explain each step in the method.

16. From 1,000 miles take five-tenths of an inch, and give the answer in miles, rods, yards, feet, and inches.

17. (*Four credits.*) A fruit peddler in San Francisco bought oranges at the rate of 3 for 4 cents, and sold them at the rate of 2 for 5 cents, clearing $4 20; how many oranges did he buy and sell?

MENTAL ARITHMETIC.

Twenty-five credits. Ten questions, two and one half credits each.

No credits allowed unless a full and correct analysis is given.

1. A man built 40 rods of wall in a certain time; another man can build 9 rods while the first builds 5; how much would he build in the same time?

2. 24 is 7 times what number?

3. If 8 dollars worth of provisions will serve 7 men 5 days, how many days would 16 dollars worth of provisions last 4 men?

4. Three men, A, B, and C, hired a garden; A paid 6 dollars; B, 5 dollars, and C, 9 dollars. They sold the produce for 40 dollars; what did each one's share amount to?

5. Two men hired a pasture for 32 dollars; the first put in 3 sheep for 4 months; the second put in 4 sheep for 5 months; how much ought each to pay?

6. A cistern has 3 pipes; the first would fill it in 3 hours; the second in 6 hours; the third in 4 hours; how long would it take them all to fill it, if they were all running at once?

7. A man and his wife found by experience that, when they were both together, a bushel of meal would last them only 2 weeks; but when the man was gone it would last his wife 5 weeks, how long would it last the man alone?

8. In Grammar, use the briefest forms of parsing and analysis; and do not waste words on details. Any school grammar, ancient or modern, or antediluvian, will be recognized as authority.

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3. In dividing one fraction by another, why do you invert the terms of the divisor? Illustrate.
4. How would you find the least common multiple of two or more fractions?
5. The longitude of Stockholm is 18° 4′ 30″; the difference in time between Stockholm and a certain place in the United States, is 6 hours, 25 minutes and 45 seconds; what is the longitude of the latter place?
6. Write a note drawn at ninety days, so that when discounted at bank, at ten per cent, the amount received shall be $1,500. Write a receipt.
7. Define the terms ratio and proportion, and derive two proportions from the fraction $\frac{3}{7}$.
8. In extracting the square root, why do you point off the number into periods of two figures each?
9. The base of a right-angled triangle which contains 339.864 square feet is three times its altitude, what is its hypothenuse?
10. Construct a geometrical series of which 12 is the first term and 15,552 is the fifth.

THIRD GRADE ARITHMETIC.

One hundred credits. Sixteen questions, six credits each.

No credits allowed unless the answer is strictly correct, and the full operation accompanies the same.

1. Find the sum, difference, and product of .025 and .0002, and the quotient of the last decimal divided by the first.
2. Find the sum, difference, and product of $\frac{7}{8}$ and $\frac{7}{12}$, and the quotient of the first fraction divided by the last.
3. A hall is 85 feet long, 44 feet wide, and 20 feet high; how far is it from one corner on the floor to the corner on the floor diagonally opposite?

4. A broker hires at a bank $500 for 90 days at 1½ per cent a month; for how much must he give his note?

5. What is the commercial discount on a bill of goods for $4,500, sold on 90 days time, 5 per cent off for cash?

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7. A man and his wife found by experience that, when they were both together, a bushel of meal would last them only 2 weeks; but when the man was gone it would last his wife 5 weeks, how long would it last the man alone?

8. If a quarter of wheat affords 60 ten-penny loaves, how many eight-penny loaves may be obtained from it?

9. What number is that which, being increased by its half, its fourth, and 18 more, will be doubled?

10. How many yards of shalloon, ⅘ of a yard wide, will line 8 yards of broadcloth that is 1½ yards wide?

GRAMMAR.

One hundred credits.

FOR FIRST AND SECOND GRADE CERTIFICATES.

1. (*Twelve credits.*) Write sentences in which a verb in the infinitive mood is the subject, the object, the predicate, nominative or adverbial element.

2. (*Ten credits.*) Correct the following, and give reasons therefor: "Did you write your letters yet?" "Will I read the sentence like you have?" "He said that a sheep and ox who were laying in the meadow has ate the grass." "I do not think it to be he for he is judicious." "I do not know but what I shall write."

3. (*Five credits.*) What is the difference between a noun in apposition with the subject and a noun used as a predicate nominative? Give example.

4. (*Six credits.*) How can a compound sentence be changed into a complex sentence? A complex sentence into a simple one? Illustrate.

5. (*Five credits.*) Make a sentence complex by means of an adjective clause limiting the object.

6. (*Ten credits.*) Parse the italicised words in the following: "David and Jonathan loved *each other*." "*What* with pestilence, and *what* with fire, London was sadly reduced." "*Whatever* purifies, *fortifies* the heart."

7. (*Ten credits.*) Give three cases where two nominatives connected by "and" do not require a plural verb. Illustrate.

8. (*Twelve credits.*) Give the passive participles of "sink;" conjugate the verb "spring," in the compound tenses of the indicative mood. Give a brief statement of the variations necessary to the conjugation of the regular verbs in the active voice.

9. (*Ten credits.*) Write the participles preferred to the following forms: Sawn; payed; shorn; abided; mown; throwed. How many tenses do you recognize in the subjunctive mood, and how are they employed?

10. (*Twenty credits.*)

> "And thus far hear me, Cromwell:
> And, when I am forgotten—as I shall be—
> And sleep in dull cold marble, where no mention
> Of me must more be heard of—say, I taught thee;
> Say, Wolsey, that once trod the ways of glory
> And sounded all the depths and shoals of honor,
> Found thee a way, out of his wreck, to rise in,
> A sure and safe one, though thy master missed it."

(*a*) What kind of a sentence is the above quotation?

(*b*) What is the principle clause?

(*c*) What element of the sentence is "Wolsey that —— it?"
(*d*) What does "When I am forgotten" limit?
(*e*) Parse "*Say.*"
(*f*) Analyze the element "And sleep in dull —— heard of."
(*g*) Parse "*thee*" in the seventh line.
(*h*) Parse "*of*" after "*heard*" in the fourth line.
(*i*) Parse "*one*" in the last line.
(*j*) What element is "Though thy master missed it," and what does it limit?

THIRD GRADE GRAMMAR.

One hundred credits. Ten questions, ten credits each.

Note. Credits will be allowed for any forms of analysis and parsing, found in any of a score of school grammars. Use *brief* forms of analysis and parsing, leaving out details.

1. Combine the following statements into a simple sentence:

"Lee advanced. He left his fortifications. He crossed the Potomac. He advanced northward. He advanced through Maryland. He advanced to Gettysburg."

2. Put the following statements into a compound sentence containing two subjects and two predicates:

"The roar of Niagara can be heard. The cloud can be seen. It can be heard at a distance of fifteen miles. There is a cloud formed by its spray. It can be seen at a distance of fifty miles.

3. Combine the following statements into a complex sentence:

(Principal.) "It would be presumptuous in us to assert something." (Subordinate.) "We look through nature. We observe the manifest indications of design. Every part of nature indicates these designs. Comets are of no use. They serve no purpose in our system."

4. Explain the distinction in the use of *shall* and *will* in the future perfect (second future) tense, indicative mood.
5. In what case is it more elegant to use "that" instead of "who" or "which"?
6. Write all the principal parts of the verb "work," all its participles, and all forms of its infinitives.

Example.

"Trust no future, howe'er pleasant,
Let the dead past bury its dead."

7. What kind of a sentence? Why? Parse *let, dead,* and *bury.*

Example.

"He stood, and called
His legions, angel forms, who lay entranced
Thick as Autumnal leaves (that strow the brooks
In Vallambrosa, where the Etrusian shades
High over-arched embower;) or scattered sedge
Afloat, when with fierce winds Orion armed
Hath vexed the Red Sea coast."—[*Milton.*

8 and 9. (*a*) What kind of a sentence? Why? How many clauses, and what kind of clauses?

(*b*) What kind of a modifier, or adjunct, is that part inclosed in a parenthesis? What does it modify?

Note. In parsing, use the shortest possible form.

10. (*a*) Parse "embower" and "armed."
(*b*) Parse "Red Sea" and "hath vexed."
(c) Parse "leaves" and "forms."

GEOGRAPHY.

One hundred credits. Twenty questions, five credits each.

FOR FIRST AND SECOND GRADE CERTIFICATES.

One credit off for each misspelled word.

1. Why are the meridians nearer together at the top than at the bottom, on a sectional map?
2. Why are the Tropics drawn 23½° from the Equator?
3. What is the population of the United States?
4. Where is Roumania? The Dead Sea? Astrachan? Mt. Vesuvius? Jeddo?
5. What country is most extensively engaged in manufacturing?
6. Locate the principal coal and iron sections of the world. Largest grain port.
7. Describe the principal river of England; of Ireland; of Australia; of Alaska; of India.
8. Which is farther north, Great Britain or New Zealand? Which has the milder Winters? Why?
9. Name the principal vegetable productions of Brazil; Arabia; Cuba; China; Africa.
10. What determines the climate of continents? Where are Winters usually more severe—on the coast, or in the interior?
11. Is Ireland in the Frigid or Temperate Zone? What articles of food are grown north of the Arctic Circle?
12. Name the largest two islands of the Empire of Japan. Of the Sandwich Islands.
13. What metals are shipped on board vessels in Lake Superior?
14. Name two animals peculiar to Australia; two to Africa; two to the Frigid Zone; two to South America.

15. What part of the United States has the least amount of rain? What part of South America? What part of Asia?
16. What causes the ebb and flow of tides?
17. Name a city on the eastern coast of the United States, a city in Europe, and a city in Asia, in nearly the same latitude as San Francisco.
18. Name the principal localities in which are found: Diamonds; Salt; Silver; Quicksilver; Gold.
19. What is the highest mountain in the United States? In the world? Give height of each.
20. In what direction do Trade Winds blow? Why?
When it is noon in San Francisco, where is it midnight?

THIRD GRADE GEOGRAPHY.

One credit off for each word misspelled. Examiners will credit strictly.

TEN QUESTIONS, TEN CREDITS EACH.

1. Write five elementary questions (adapted to a class using a primary geography), about the local geography of the place in which the examination is held.
2. Write ten questions that you would ask a child before whom you have placed a globe.
3. Write five of the most important points about the geography of the United States, to which you would drill a class in primary geography.
4. What parts of the primary geography in common use do you consider of the greatest value to a child?
5. Bound Germany, name in it four large cities, two rivers, and one mountain range.
6. Name the three great rivers of the entire Pacific Coast of the United States; the four principal cities; the four principal mountain ranges, and the four leading exports.
7. Describe the Japan Current.
8. Why is the climate near the Poles colder than the climate near the Equator?
9. Why are the summits of mountains in the torrid zone covered with snow all the year round?
10. Where is the island of New Zealand and to whom does it belong?

HISTORY OF THE UNITED STATES.

Fifty credits. Ten questions, five credits each.

FOR FIRST AND SECOND GRADE CERTIFICATES.

One credit off for each misspelled word.

1. Name a portion of America discovered by the English; the Dutch; the Spanish.

2. What can you say of an account of the discovery of America by Europeans before the time of Columbus?

3. When and by whom was each of the following settled: Massachusetts? New York? Virginia? Maryland? Santa Fé?

4. Name three European wars which greatly affected the American colonies. Name an important event in each.

5. State cause and chief result of war of 1812. Name principal land battle and naval battle of that war.

6. State cause, principal battle, and result of Mexican War.

7. How did Canada become a British province? For what is General Wolfe distinguished?

8. State the result of the following battles of the Revolution, and name the respective commanders: Trenton; Saratoga; Stony Point; Yorktown; Brandywine.

9. Mention a leading event in each of the following administrations: Madison's; Jackson's; Washington's; Polk's; Adams'.

10. Name the State in which the following battles were fought, and state result of each: Shiloh; Gettysburg; Chancellorsville; Fredericksburg. Who were the commanders in each?

ALGEBRA.

Fifty credits. Ten questions, five credits each.

1. Remove the parenthesis from the following expression and reduce the result: $a + 2c - (4c - 3a + 2m.)$

2. Multiply $3x^2 - 2yx + 5$ by $x^2 + 2xy - 3$.

3. Show that in multiplication like signs give plus and unlike minus.

4. $\frac{2y\,(y^2 - x^2)}{5b\,(c^2 - x^2)} \div \frac{4y^2 - 4yx}{10\,(bc + bx.)}$. Reduce to its simplest form.

5. How is an equation solved?

6. Find the values of x and y, by *comparison*, in the following equations:

$$x - \tfrac{1}{7}(y - 2) = 5.$$
$$4y - \tfrac{1}{8}(x + 10) = 3.$$

7. Divide $3a^4 - 8a^2b^2 + 3a^2c^2 + 5b^4 - 3b^2c^2$ by $a^2 - b^2$.

8. $\frac{x - ax}{\sqrt{x}} = \frac{\sqrt{x}}{x}$ Find the value of x.

9. A person purchased a number of yards of cloth for $2 40. If he had paid the same sum for three yards more, it would have cost him four cents less per yard. How many yards did he buy?

10. Raise $3a - 2x$ to the fifth power by the binomial theorem.

PHYSIOLOGY.

Fifty Credits. Ten questions, five credits each.

1. How is it possible for the blood to flow in opposition to gravity? Where and by what means is the heat of the body generated? What is the temperature of the human body?

2. Out of what is bile made? Name five fluids employed in the process of digestion.

3. What organ of the body receives the most blood? What is the largest gland in the body? Describe the brain.

4. What parts of the body are destitute of blood vessels? Name the component parts of the blood.

5. Where do we find mucous membrane? Where do we find serous membrane?

6. Describe the spinal cord. Where is its most sensitive point? What are ganglia?

7. Describe the circulation of the blood.

8. Name the cartilages of the larynx.

9. What is the pulse, and why is it not generally felt throughout the body?

10. Describe the teeth.

NATURAL PHILOSOPHY.

Fifty credits. Ten questions, five credits each.

1. How is attraction of gravitation defined? (*b*) Give some familiar instances in which the law of gravity or gravitation acts.

2. How do you know that two forces acting conjointly on a body do not produce as great an effect as if they were to act separately?

3. What is the reason that heavy packages are drawn up planks from the street to a warehouse, instead of being lifted perpendicularly up?

4. What is necessary in order that the pressure of fluids should be equal in all directions?

5. How is the nature of intermitting spring accounted for? Explain the theory.

6. Why are the lower regions of the atmosphere more dense than those higher up?

7. Upon what does the mischief occasioned by lightning depend?

8. As the rays of light passing through a double convex lens meet in the focus, what will happen if there is nothing to receive them there?

9. How is it that we see the images of objects in the proper erect position, since they are inverted upon the retina?

10. What is supposed to be the nature of the agent producing the phenomena of electricity?

READING AND RHETORIC.

Twenty-five credits. Five questions, three credits each. Composition, ten credits.

1. Define and give the uses of the apostrophe, hyphen, caret, brackets, cedilla.

2. Correct the following: Sir roger L estrange enjoyed in the reign of charles 2d and james 7th great notoriety as an occasional political writer he is known also as a Translator having produced versions of esops fables senecas Morals ciceros offices, erasmuss colloquies quevedos visions and the works of josephus.

3. What is a *Loose* Sentence? What authors may be called periodic? What is a Balanced Sentence? Mention some writer who is characterized by this style.

4. What is the difference between wit and humor? Name a witty writer; a humorous writer. What is a pun?

5. Define Poetry. Mention chief varieties of prose composition. Define Blank Verse—Stanza. Write a short composition on either of the following subjects: "Early Rising," "The Chinese," "Effects of Ridicule," "I told you so."

SPELLING.

Fifty credits. One hundred words, one half credit each.

FOR ALL GRADES.

Examiners will pronounce the words to the candidates.

repell'.	mu'silage.	cinsinnat'ti.	tiz'zik.
sale'able.	cris'talyze.	embar'rass.	legit'amate.
alledge'.	exib'it.	def'erence.	haw'ie.
missela'nious.	fase'cious.	dif'erence.	fer'tillize.
ac'quiduct.	tir'rannize.	par'allellism.	dil'ligence.
seppera'tion.	shandaleer'.	tyr'annize.	os'silate.
skill'full.	outra'gious.	inic'quitous.	dipthe'ria.
seej.	ex'tasy.	recep'tical.	idiosin'cracy.
siv.	dem'magog.	sacreli'gious.	naw.
plen'tyous.	konnisur'.	rad'dish.	hik'up.
sinseer'.	anni'hillate.	va'rigate.	coaless'.
chill'blane.	mannu'ver.	cu'llander.	corrob'orate.
flem.	pref'ferrable.	hol'libut.	cer'rate.
impune'.	cor'nace.	dia'fram.	simulta'nious.
sussep'table.	bwoy'ansy.	excheck'er.	cortej'.
appaul'.	metal'lick.	rec'compence.	hipoc'racy.
hand'fulls.	conscien'sious.	inve'gle.	superseed'.
seeze.	sin'icle.	par'adim.	exil'larate.
fullfill'.	scep'tick.	sas'ifrass.	sir'fit.
ga'j.	critisize.	ras'berry.	sir'-kit.
mat'ress.	innuen'do.	complai'sence.	occur'ance.
quar'eld.	superseed'.	convey'or.	twinj'ing.
charj'able.	interseed'.	lay'ity.	ben'efited.
judge'ment.	legit'amasy.	nitch.	roo'matism.
defer'ing.	partyzan.	syrrinj.	skur'rillous.

DEFINING.

Twenty-five credits. Twenty-five words, one credit each.

FOR FIRST AND SECOND GRADE CERTIFICATES.

1. Allopathy.
2. Virtually.
3. Cursory.
4. Lapidary.
5. Insidious.
7. Verbose.
8. Extirpate.

10. Succinct.
11. Captious.
12. Aspersion.
13. Philology.
14. Topography.
15. Virtuoso.
16. Obloquy.
17. Choleric.
18. Sophistry.
19. Palladium.
20. Idyl.
21. Asseverate.
22. Specious.
23. Contumacy.
24. Vicarious.
25. Fallacious.

THEORY AND PRACTICE OF TEACHING.

Fifty credits. Ten questions, five credits each.

FOR ALL GRADES.

1. To what extent should a teacher have a plan? For what should he plan?
2. In what direction should the memory be cultivated in children? What is the prevalent fault in its cultivation?
3. What opinion have you of the length of exercises for children? What effect has novelty?
4. What is the use of cabinets, maps, and other intellectual furniture of a school room?
5. What class of studies is best adapted to children?
6. How can the special senses be educated? Illustrate.
7. How is the analytic power of the mind developed? Of what use is it?
8. How would you develop the ideas of number and form, in a child?
9. What mental faculties lend their aid to the expressive power?
10. Which mental faculty is the basis of reflection? Why? What is the exact meaning of the word *Reason?* Apply the exact meaning to the mental act.

COMPOSITION.

Fifty credits. Five questions, five credits each.

FOR ALL GRADES.

One credit off for each misspelled word, and each omission or misplacement of a period or semicolon.

Examiners will pay special attention to style of sentences, spelling, use of capitals, and punctuation:

1. Paraphrase the first and second stanzas of the Parting of Marmion and Douglas—page 406, McGuffey's Sixth Reader. Point out the different subjects of discourse.
2. Write a letter to the Superintendent of Schools in *any* State, asking for information concerning school governments, salaries, or qualifications of teachers.
3. Write some anecdote, explain its application, and carefully observe the rules for punctuation.

4. Write a quotation from some American poet, giving the author's name.
5. Write a short sketch of some hero or heroine from the works of any prominent novelist, as Dickens, Thackeray, etc. (Length from ten to twenty lines.)

PENMANSHIP.

Twenty-five credits. Five questions, five credits each.

1. Make and name the elements and principles of which script letters are composed.
2. Analyze, first, into its principles, second, into its elements:

a; w; g; W; T; O.

3. Name the standard for measuring script letters.
4. In writing words, to what three things must the pupil's attention be directed?
5. How should the pen be held, according to Payson & Dutton's system of penmanship?

CONSTITUTION AND GOVERNMENT.

Twenty-five credits. Five questions, five credits each.

1. Describe the workings of the writ of habeas corpus.
2. What are the principal powers vested in Congress?
3. How are Territories governed?
4. How is the judicial power of the United States vested?
5. Enumerate the principal subjects over which the United States District Court has jurisdiction.

SCHOOL LAW.

Twenty-five credits. Seven questions, three credits each.

1. What constitutes a legal certificate? How many grades of certificates?
2. What studies are required to be taught in public schools?
3. What regulations about sectarianism in schools?
4. What regulation about children under eight years of age?
5. What power have teachers over pupils on the way to or from school?
6. Name two powers of the State Board of Education.
7. How many Trustees does each County School District have?
8. (*Four credits.*) When does the school year begin and end?

[SEPTEMBER, 1872.]

ARITHMETIC.

FIRST AND SECOND GRADES.

Ten questions, ten credits each.

1. Perform an example in simple proportion, and explain why you make the statement you do. (No credits for example without explanation.)
2. Sold two lots at $2,250 each; for one received 12½ per cent more than cost, and for the other 12½ per cent less than cost. Did I gain or lose, and how much?
3. What will I gain per cent by purchasing goods on 7 months credit, and selling them immediately for cash at cost, money being worth 10 per cent?
4. What is the greatest common divisor of 3013, 2231, 2047? Least common multiple of $\frac{7}{24}$, $\frac{35}{36}$, $\frac{49}{60}$?
5. What is the difference between $\frac{1}{7}$ of 4 A. 3 R, 12 P., 20 sq. yd. and 4 times 2 0⅓ A.?
6. What is the difference between the interest and the discount of $545 50 due 8 months hence, at 1¼ per cent a month?
7. How much fencing will it require to inclose a square field of which the diagonal is 405 feet?
8. An annual pension of $100 is in arrears 4 years. What is the amount now due, allowing 5 per cent compound interest?
9. What is the length of each side of a cubical cellar of which the contents are 1953.125 cubic feet?
10. Mention two advantages the Metric system of weights and measures has over that generally used in the United States. In 12½ yards, how many meters?

ARITHMETIC.

THIRD GRADE.

One hundred credits. Ten questions, ten credits each.

1. Divide 2.88 by .004, and give reason for pointing off the quotient. (No credits unless the reason be given.)
2. What will it cost to carpet a room 20 feet long and 18 feet wide, with carpeting ⅔ of a yard wide, at $2 50 a yard?
3. What is the commercial discount on a bill of goods invoiced at $2,450, sold on 10 months time, 3 per cent off for cash?
4. A house and lot cost $2,800. The taxes are $55 a year, and the rent is $35 a month. What per cent does the property pay?
5. In what time will a note of $375 amount to $465 at 8 per cent a year?
6. If a town 5 miles square be divided equally into 112 farms, how much will each farm contain?
7. Find the greatest common divisor and least common multiple of 141, 799, 940.

8. A lot 100 feet square is covered by a deposit of sand 4½ feet thick. What will it cost to remove the sand at 30 cents a cubic yard?

9. A merchant having failed, owes the following sums: to A., $1,000; to B., $1,500; to C., $2,000; to D., $2,500. He gives up his property, worth $2,900, to his creditors; how much will this pay on the dollar? (By proportion.)

10. What is the distance between the opposite corners of a square field containing 100 A.?

MENTAL ARITHMETIC.

Twenty-five credits. Ten questions, two and one half credits each.

Analyze the following questions:

1. A and B have the same income; A saves ⅛ of his, but B, by spending $80 per annum more than A, at the end of eight years finds himself $40 in debt. What is their annual income?

2. ⅔ is what part of 10½? Give close analysis.

3. What number is that to which if you add 3 times itself the sum will be ⅔ of 48?

4. Anna and Ellen can perform a piece of work in three days; Ellen can perform it alone in 5 days; in how many days can Anna do the work?

5. 7 times a number is 15 more than 4 times the same number. Required the number.

6. What number is that which being divided by 7, and the quotient diminished by 10, three times the remainder shall equal 24?

7. Bought some maps for $21 and sold the same for $28. What per cent did I gain?

8. Sold some books for $25 and thereby gained 25 per cent. Required the cost price.

9. What is the interest of $600 for 5 months at 1½ per cent per month?

10. A wall, which was to be built 32 feet high, was raised 8 feet by 6 men in 12 days. How many men must be employed to finish the wall in 6 days?

GRAMMAR.

FOR FIRST AND SECOND GRADE CERTIFICATES.

Ten questions, ten credits each.

1. Make a simple sentence, using the words, *John Hampden, patriot.* Make the same complex, by an added clause containing the word *taxation.*

2. Correct the following sentences, and give reasons:

"Nor eye, nor listening ear, an object find."

"James differs with John in height."

"The river and the brook, also, flow into the lake."

"Between you and I, I suppose each of you think it is your own nail."

3. Write two sentences, one containing a noun, the other an adjective, used as attributes of the subject.

4. What is conjugation? What is synopsis? Conjugate the verb lie (to recline), in the indicative mood, perfect tense.

5. "He returned a friend, who came a foe." Parse "*friend*," and "*foe*."

6. Construct sentences illustrating the adjective and participial use of the word "*rising*."

7. Define redundant verbs. Give an example.

"He sinks into thy depths with bubbling groan,
——Unknell'd, uncoffin'd, and unknown."

Parse the three words in the last line.

8. "Jeffreys, the then Judge, was cruel." Parse "*then*."

"It is an honor to be the champion of such a cause." Parse "*to be*," "*champion*," and "*honor*."

9. What is an idiom? Give an example. What is the difference between *syntax* and *etymology?*

Give three rules of orthography, and illustrate.

10.

"Hail, holy Light! Offspring of Heaven first born,
Or of the Eternal co-eternal beam
May I express thee unblamed? Since God is light,
And never but in unapproached light
Dwelt from eternity, dwelt then in thee,
Bright effluence of bright essence increate.
Or hearest thou rather pure ethereal stream,
Whose fountain who shall tell."

a. Parse "*offspring*," and "*first born*."
b. Parse "*beam*."
c. Parse "*unblamed*."
d. Explain the line, "May I express thee unblamed?"
e. Parse "*since*."
f. What is the subject of the sentence, "Since God —— increate?"
g. Parse "*effluence*."
h. Parse "*increate*."
i. Explain the last two lines.
j. Parse "*stream*" and "*fountain*."

GRAMMAR.

THIRD GRADE.

One hundred credits. Eight questions, ten credits each.

1. Form sentences using *that* in its various functions.

2. Explain the use of the past, perfect, and pluperfect tenses.

3. Explain what you understand by a compound and complex sentence; what by a clause and a phrase. Define each and give examples.

4. Write the possessive case, singular and plural, of deer, goose, it, lady, man.

5. State the mood, tense, and voice of the verbs in the following sentences: I am struck; he is reading; dost thou sleep? he will have been thinking; do not run.

6. Form the plural of the following words, and state the rule: brook house; church, kiss, box, wish; money, chimney, day; duty, fly, melody; sheaf, leaf, thief; grief, gulf, chief; handful, man-servant; axis, basis, phenomenon.

7. Correct the following sentences: (No credits unless the *reason* for correcting are given.) "He is the tallest of the two." "Who do you want?" "I had no doubt of it being him?" "Everybody should mind their own business."

8. Which of the auxiliaries denote emphasis? Possibility? Power? Necessity? Futurity?

Ten Credits.

9. Copy, correct, and punctuate the following, placing capital letters where they ought to be:

"truth crushed to earth shall rise Again
The eternal years of god are her's
but error wounded Writhes with pain
and Dies Among her worshippers."

One credit off for each error uncorrected.

Ten Credits.

10.

"Beneath those rugged elms, that yew tree's shade,
Where heaves the turf in many a mouldering heap,
Each in his narrow cell forever laid,
The rude forefathers of the hamlet sleep."

Five questions, two credits each.

(*a*) What kind of a sentence is the preceding stanza, and why?
(*b*) What is the subject and predicate of the above sentence?
(*c*) In what case is *each*, and why?
(*d*) Parse *beneath*.
(*e*) In what mood is *heaves*, and what is its subject?

GEOGRAPHY.

FOR FIRST AND SECOND GRADE CERTIFICATES.

One hundred credits. Twenty questions, five credits each.

1. What is the government of the Sandwich Islands?
2. What *new* discovery has been made in regard to the Nile River? By whom?
3. Which is now considered the greatest commercial city of Asia?
4. Locate Skager Rack, Ceylon, Faroe Islands, Manila, the Crimea.
5. What are the termini of the Central and Union Pacific Railroads?
6. What new diamond fields have been discovered?
7. Where is there to be found an independent government of black people?

8. Where are the following articles most extensively manufactured: costly laces? silk velvet? fine cutlery? shawls? crape?
9. Which is farther south, Edinburgh or Sitka? Which is farther north, Cape Town or Valparaiso?
10. In what islands is tin found? What grain will grow in Iceland? Why?
11. Describe the shortest water trip from London to Canton.
12. Why does California have no rain in Summer?
13. What causes led man from a state of barbarism to that of civilization?
14. What advantage to Great Britain is her insular character?
15. Give three examples of climate modified by the direction of neighboring mountain chains.
16. Mention the peculiarity of each of the following localities: Lake Tchad, Lake Titicaca, Caspian Sea, Dead Sea, and Egypt.
17. Mention islands that are probably detached portions of the main land.
18. Name the localities from which are obtained nutmegs, coffee, maple sugar, dates, gutta percha.
19. Mention localities noted for their fogs, and explain the causes.
20. In what direction are the Niagara Falls wearing away the land? What proof of this have we?

GEOGRAPHY.

THIRD GRADE.

One hundred credits. Ten questions, ten credits each.

1. Locate Roumania, Mt. Etna, Auckland, Swansea, Callao.
2. In what zone is Iceland? Sandwich Islands? Egypt? What is the most southerly point of land that you can mention? The most northerly?
3. How far are the Polar Circles from the Poles? Why?
4. Name three large cities in about the same latitude as San Francisco.
5. What is the principal city of Oregon? Arizona? Washington Territory? Wyoming? Nebraska?
6. Name the principal localities from which we obtain coal, quicksilver, coffee, sugar, cotton.
7. What are the most important five products of California?
8. On what does the climate of a place depend? Name two places in the same latitude that have not the same climate.
9. What is the largest city in Europe? Australia? Africa? Through what countries does the Danube flow?
10. Why are the days short in Winter and long in Summer?

HISTORY OF THE UNITED STATES.

FIRST AND SECOND GRADE QUESTIONS.

Ten questions, five credits each.

1. What nations discovered or explored California, Florida, interior of Mexico, Gulf of St. Lawrence?
2. What was a *proprietary* government? Example. What was the Navigation Act?
3. What social, moral, and religious differences existed between the settlers of New England and the Virginia colony?
4. Give an account of Roger Williams. Give an account of Wm. Penn.
5. What was done for education by the colonists?
6. Name the wars that had their origin in Europe and extended to the colonies, and those that originated among the colonists themselves.
7. What was done by the first Continental Congress? What was the character of the King who ruled the Colonies?
8. What was the situation of affairs at the close of 1779?
9. Which Presidents served two terms? Which Presidents died in office? What Vice Presidents became Presidents? What Presidents were military heroes?
10. Name five military commanders of distinction, who served in the war of secession, and relate some exploit of each.

ALGEBRA.

Fifty credits. Ten questions, five credits each.

1. Explain the rule for the subtraction of algebraic quantities. From $8a^2c - 14aby + 7ab^2$ take $9a^2c - 14aby + 15ab^2$.

2. $\frac{3c^2(1-x)^{-2}(x-y)}{4m(x-y)^2(1-x)}$; transfer the factors containing unknown quantities to the numerator.

3. Add $\frac{a+b}{(b-c)(c-a)}$, $\frac{b+c}{(c-a)(a-b)}$, and $\frac{c+a}{(a-b)(b-c)}$. Give the work in full.

4. From $\frac{x^2+x-5}{2x^2-11x+12}$ take $\frac{x^2+x-1}{2x^2+5x-12}$.

No credits unless the full operation is given.

5. Find the factors of $a^3 - ab^2 + 2abc - ac^2$.

6. Substitute $s + r$ for x, in $x^2 + ax + b$, and arrange the result according to the descending power of r.

7. Simplify $\dfrac{\frac{a+1}{a} + \frac{b+1}{b} - \frac{c+1}{c} - \frac{d+1}{d}}{\frac{cd}{c+d} - \frac{ab}{a+b}}$

8. What fraction is that, to the numerator of which, if 2 be added, the fraction will be $\frac{5}{7}$, but if to the denominator 2 be added, the fraction will be $\frac{1}{2}$?

9. Find four numbers, such that if 3 times the first be added to the second, 4 times the second be added to the third, 5 times the third be added to the fourth, and 6 times the fourth be added to the first, each sum shall be 359.

10. Add $\sqrt{\frac{7}{8}}$ and $\sqrt{\frac{17}{50}}$.

PHYSIOLOGY.

Fifty credits. Ten questions, five credits each.

1. Of how many bones does the entire skeleton in the adult consist? Enumerate them according to their respective classes or divisions.
2. Describe and give the use of the following bones: Patella, Clavical, Scapula, and Os Calcis.
3. What is the difference between Serous, Synovial, and Mucous membranes?
4. Describe the structure of arteries and name some of the most important ones.
5. What are veins? State the difference between Pulmonary and Systemic veins.
6. What are Lymphatics? Name some of the most important ones and state where situated.
7. Name the membranes of the brain. Describe each.
8. Describe the tongue, its surroundings and attachments.
9. Describe the liver. Gall. Bladder.
10. Describe the structure of the heart and its position in the pericardium.

NATURAL PHILOSOPHY.

Fifty credits. Ten questions, five credits each.

1. How many kinds of levers? What law governs each?
2. What do you understand by Expansion, Liquefaction, and Vaporization?
3. Where is the absolute humidity of the atmosphere the greatest?
4. What do you understand by absolute and specific weight?
5. What is electro-magnetism, and how produced?
6. Of what is atmospheric air composed? What is the weight of air compared with that of water?
7. What are the modes of investigation and the modes of reasoning in physics?
8. Define Natural Philosophy and state its relations to Chemistry.
9. Why will a small needle carefully laid upon the surface of water float?
10. Describe the construction of a thermometer. Explain why alcohol is preferred to mercury in very high latitudes.

READING AND RHETORIC.

Twenty-five credits. Ten questions, two and one half credits each.

1. Mention the faults of *articulation*. Illustrate.
2. Define *inflection* and give the "*marks*" used in indicating it.
3. What is the use of *emphasis?* How is it accomplished?
4. What is meant by *rotundity* of voice? How produced? Adapted to what style of composition?
5. What do you mean by the term "natural reading?" How would you teach the art of reading? Would you or would you not *drill* a pupil on certain selections?
6. Define the characters used in punctuation.
7. What languages have contributed most largely to the formation of the English language?
8. What is ambiguity of a sentence? How produced and how to be remedied?
9. What is a *diæresis* and how indicated? Give example.
10. What is meant by a "folio volume?" A "quarto volume?" An "octavo volume?" What abbreviated form of expression is used to indicate each respectively?

Oral reading, not to exceed twenty-five credits.

SPELLING FOR ALL GRADES.

One hundred words—half credit each—to be dictated by the Examiner.

traceable.	civilization.	vegetable.	gopher.
criticise.	aqueduct.	Cairo.	coyote.
rivaled.	technical.	radish.	mignonette.
characterize.	embarrass.	raspberries.	connoisseur.
sumptuary.	proselyte.	axe.	fulfill.
ecstasy.	chicanery.	llanos.	bananas.
advantageous.	reveille.	seizing.	twinging.
advertise.	spontaneous.	revise.	catarrh.
benefited.	Pharaoh.	niece.	Confucius.
malleability.	panegyric.	shepherd.	parsley.
impugn.	buoyant.	righteous.	skein.
metallurgy.	marvelous.	guinea.	drought.
spherical.	erysipelas.	lachrymose.	lasso.
changeable.	equitable.	anonymous.	surcingle.
judgment.	mucilage.	nausea.	soubriquet.
gauge.	aquafortis.	conchology.	sassafras.
annihilate.	collieries.	parterre.	precincts.
detach.	developed.	sacrilege.	tranquillity.
supervise.	handicraft.	dissension.	philologist.
parallelism.	miscellaneous.	clapboards.	rarefy.
Mediterranean.	woolen.	scalawag.	ku-klux.
unique.	coeval.	sergeant.	pageant.
drought.	spontaneously.	referee.	ostensible.
adzes.	llama.	façade.	contiguity.
chisels.	glaciers.	cocoa.	chalybeate.

WORD ANALYSIS.

Twenty-five credits. Five questions, one credit each.

1. What is a derivative word and how is it formed? Give an example.
2. What is meant by the analysis of a word? Analyze and define *unhappiness.*
3. What does the prefix *in* or *im* mean? Analyze and define *invisible, impolite.*
4. What is the *root* of a word? Give the root and derivation of *contemporary, embody.*
5. What are synonyms? Give two examples.

Twenty words, one credit each.

Define and separate the following words into their roots, prefixes, and suffixes:

1. Reanimate.
2. Pantheism.
3. Incorporate.
4. Recrimination.
5. Indignity.
6. Transitory.
7. Egregious.
8. Dilapidated.
9. Confluence.
10. Homogeneous.
11. Immortalize.
12. Inoculate.
13. Sympathy.
14. Expedite.
15. Eruptive.
16. Quadruped.
17. Satisfaction.
18. Interlude.
19. Suspend.
20. Thermometer.

THEORY AND PRACTICE OF TEACHING.

Fifty credits. Ten questions, five credits each.

1. Define Memory and Attention.
2. What means should be employed to secure the *attention* of small children? What is the necessity of its cultivation?
3. How would you secure a habit of thought in a class?
4. What use should be made of *object teaching?*
5. How would you deal with a pupil who deliberately made false statements?
6. Give your methods of teaching spelling.
7. What is your opinion of the Monitorial System?
8. To what degree do you think familiarity should exist between teacher and pupil?
9. How would you teach *division of fractions?* Illustrate.
10. What general care should a teacher exercise over the pupils, and over the school-room?

COMPOSITION.

Twenty-five credits. Five questions, five credits each, for all grades.

One credit off for each misspelled word, and each omission or misplacement of a period, semicolon, or capital.

1. Explain your method of teaching young children to write compositions.

2. Write a short note to a friend, giving some information about the Common School System of Germany.
3. Write a brief outline of the life of some distinguished American.
4. Expand the thoughts contained in the following selection:

"The year
Has gone, and with it many a glorious throng
Of happy dreams. Its mark is on each brow,
Its shadow in each heart.

5. Express, in plain prose, the ideas contained in the following stanza:

"He who ascends to mountain tops shall find
The loftiest peaks most wrapt in clouds and snow.
He who surpasses or subdues mankind,
Must look down on the hate of those below.
Though high *above* the sun of glory glow,
And far *beneath* the earth and ocean spread,
Round him are icy rocks, and loudly blow
Contending tempests on his naked head,
And thus reward the toils which to those summits led."
—BYRON.

PENMANSHIP.

Five questions, five credits each.

1. Give three rules for height, slope, distance, of letters.
2. Make the elements and principles used in forming the small letters.
3. Make sets of capital and small letters.
4. How would you teach writing in an ungraded school?
5. Copy the following stanza:

"We count the broken lyres that rest
Where the sweet wailing singers slumber.
But o'er their silent sister's breast
The wild flowers who will stoop to number?
A few can touch the magic string,
And noisy Fame is proud to win them;—
Alas for those that never sing,
But die with all their music in them."

CONSTITUTION AND GOVERNMENT OF THE UNITED STATES.

Twenty-five credits. Five questions, five credits each.

1. What is a Preamble? Repeat that prefixed to the Constitution of the United States.
2. Is the United States a Consolidated or a Confederate Government? Why?
3. What qualifications are necessary for the President of the United States?

4. Mention the Executive Departments. How are they appointed?
5. Can an Act of Congress be illegal? When and how determined?

SCHOOL LAW.

Twenty-five credits. Five questions, five credits each.

1. What constitutes a valid certificate? Can State certificates be renewed?
2. By whom and in what manner are State and County Funds apportioned?
3. What reports are teachers required to make to the County Superintendent?
4. How are seats apportioned in the State Normal School?
5. What is the duty of the State Controller in regard to the School Funds? The duty of the State Treasurer?

LIST OF HOLDERS OF STATE CERTIFICATES AND DIPLOMAS, IN FULL FORCE AND EFFECT, JUNE 30TH, 1873.

Life Diplomas.

Name.	When issued.
Abbot, Warren	November 11, 1871.
Allen, L. D	November 11, 1871.
Allsopp, J. P. C	November 25, 1869.
Ames, Chas. G	November 25, 1869.
Anderson, J. W	December 15, 1868.
Atwood, Mrs. C. L	November 29, 1867.
Austin, Miss Minnie F	December 27, 1866.
Bagnall, John	November 29, 1867.
Bailey, C. P	December 15, 1868.
Baker, Geo. F	June 21st, 1873.
Beals, Mrs. C. R	June 3, 1872.
Benjamin, C. V	June 3, 1872.
Black, Samuel T	December 13, 1872.
Bodwell, Miss Mary L	December 27, 1866.
Bolander, H. N	December 15, 1868.
Bradley, Theodore	December 27, 1866.
Braly, John H	November 25, 1869.
Brodt, A. W	March 14, 1871.
Brown, George	December 27, 1866.
Brown, F. R	July 5, 1867.
Bunnell, Geo. W	December 27, 1866.

Life Diplomas—Continued.

Name.	When issued.
Campbell, Miss C. E.	December 13, 1872.
Carlton, H. P.	June 8, 1866.
Casebolt, Miss M. A.	June 3, 1872.
Chapman, M. V.	June 3, 1872.
Chestnutwood, Jno. A.	February 17, 1873.
Childs, C. W.	May 27, 1868.
Clapp, Mrs. L. K.	December 15, 1868.
Clark, Dorcas	November 29, 1867.
Clark, Mary E.	November 29, 1867.
Clark, Miss H. M.	December 27, 1866.
Clark, L. R.	July 12, 1870.
Cleveland, Miss E. A.	June 3, 1872.
Coe, Eli G.	March 14, 1871.
Conklin, E. B.	March 14, 1871.
Cook, Mrs. P.	March 9, 1870.
Cottle, Melville	May 21, 1869.
Crowell, C. H.	February 17, 1873.
Cummings, C. C.	December 27, 1866.
D'Arcy, Miss M. E.	December 13, 1872.
Deane, Mrs. M.	June 13, 1871.
Denman, James	December 27, 1866.
Drake, A. J.	March 14, 1871.
Duane, Mrs. A. S.	June 3, 1872.
DuBois, Mrs. A. E.	December 15, 1868.
Farley, A. J.	December 13, 1872.
Finch, J. B.	November 11, 1871.
Fitzgerald, A. L.	November 11, 1871.
Fowler, Miss Laura T.	December 15, 1868.
Fry, W. H.	December 13, 1872.
Fuller, A. L.	November 25, 1869.
Furlong, N. (revoked 1873)	June 13, 1871.
Gates, Freeman	December 13, 1872.
Gorman, W. J.	February 17, 1873.
Goodrich, A. H.	June 20, 1868.
Graf, Miss Minnie	December 13, 1872.
Granger, W. N.	May 2, 1868.
Gray, Jno. C.	May 21, 1869.
Griffith, Mrs. Aurelia	March 14, 1871.
Gwinn, James M.	November 11, 1871.
Harlon, James	September 24, 1867.
Hart, W. C.	February 17, 1873.
Herbst, A.	February 17, 1873.
Hill, Miss A. H.	February 17, 1873.

Life Diplomas—Continued.

Name.	When issued.
Hill, Whitman H.	March 14, 1871.
Hodgdon, Miss S. J.	December 13, 1872.
Hoitt, Ira G.	December 27, 1866.
Holbrook, T. W. J.	December 27, 1866.
Holder, W. W.	November 11, 1871.
Holmes, Ahira.	December 27, 1866.
Holmes, Ellis H.	December 27, 1866.
Howe, H. H.	May 27, 1868.
Howe, J. M.	September 24, 1867.
Houghton, Miss E. W.	December 27, 1866.
Hudson, J. A.	February 17, 1873.
Humphrey, E. D.	May 27, 1868.
Hunt, Miss Carrie L.	March 9, 1870.
Jackman, Samuel H.	May 9, 1870.
Jessup, Miss S. A.	December 13, 1872.
Jewett, Miss Susan N.	June 3, 1872.
Johns, Charles T.	November 11, 1871.
Johnson, J. G.	March 9, 1870.
Jones, George W.	November 11, 1871.
Kennedy, Kate.	November 29, 1867.
Kennedy, J. G.	November 11, 1871.
Kennedy, W. W.	November 11, 1871.
Kercheval, Miss Jennie G.	November 25, 1869.
Kinne, H. C.	June 3, 1872.
Kirkpatrick, J. M.	November 25, 1869.
Knowlton, Ebenezer.	December 27, 1866.
Leadbetter, W. R.	July 12, 1870.
Leggett, Joseph.	June 3, 1872.
Leonard, T. C.	December 27, 1866.
Levinson, Miss Rosa.	June 3, 1872.
Lighthall, G. E.	March 14, 1871.
Littlefield, J. D.	December 27, 1866.
Loomis, Miss Amanda.	December 15, 1868.
Lucky, W. T.	November 29, 1867.
Lynch, Miss Frances.	December 27, 1866.
Mack, George C.	December 27, 1866.
Mackall, J. N.	December 13, 1872.
Makinney, H. E.	December 15, 1868.
Mann, Azro L.	November 29, 1867.
Marks, Bernhard.	June 8, 1866.
Marriner, R. K.	December 27, 1866.
Marsh, Mrs. S. W.	June 13, 1871.
McChesney, J. B.	July 5, 1867.
McDonald, A. H.	December 15, 1868.

Life Diplomas—Continued.

Name.	When issued.
McFadden, W. M.	March 14, 1871.
Menefee, C. A.	November 11, 1871.
Millette, Percival C.	March 14, 1871.
Minns, George W.	June 8, 1866.
Moore, John A.	March 14, 1871.
Morgan, Mrs. L. A.	December 13, 1872.
Morrill, Jos. C.	September 24, 1867.
Morris, Geo. F.	September 24, 1867.
Morse, Augustus, Jr.	November 29, 1867.
Myrick, Thos. S.	December 27, 1866.
Nelson, Henry A.	March 14, 1871.
Nutting, H. N.	December 27, 1866.
O'Connor, Joseph	March 14, 1871.
Olinger, A. F.	December 13, 1872.
Parker, Miss Jean	March 14, 1871.
Pascoe, Miss Mary I.	June 3, 1872.
Pelton, John C.	December 27, 1866.
Penwell, S. A.	June 20, 1868.
Potter, M. B.	March 14, 1871.
Power, Frank	November 11, 1871.
Prescott, Miss D. S.	March 14, 1871.
Preston, E. M	May 21, 1869.
Price, Caroline	November 29, 1867.
Prior, Philip	March 14, 1871.
Randall, A. H	June 19, 1868.
Reed, L. W.	July 12, 1870.
Reynolds, Mrs. F. E.	December 13, 1872.
Rose, T. H.	June 20, 1868.
Rousseau, E.	May 21, 1869.
Rowe, Miss A. A.	February 17, 1873.
Rowell, W. K.	December 27, 1866.
Sanders, W. A.	May 21, 1869.
Schellhous, E. J.	May 21, 1869.
Shaw, Miss E. A.	June 3, 1872.
Shearer, S. M.	December 13, 1872.
Sibley, J. M.	December 27, 1866.
Simon, Miss Francis	December 13, 1872.
Simonton, Geo. W.	December 27, 1866.
Slavan, Miss A. E.	June 3, 1872.
Smith, Miss Annie	May 27, 1868.
Smith, Miss Carrie L.	December 13, 1872.
Smith, Miss Jennie	June 3, 1872.
Smith, W. A. C.	June 19, 1868.

Life Diplomas—Continued.

Name.	When issued.
Southworth, Mrs. E. A.	December 15, 1868.
Stevens, Stephen C. (revoked 1873)	March 14, 1871.
Stone, H. P.	March 14, 1871.
Stone, D. C.	December 27, 1866.
Stowell, Miss M. E.	June 3, 1872.
Stowell, Miss P. M.	June 3, 1872.
Stratton, James	December 27, 1866.
Sullivan, Miss Kate	June 3, 1872.
Swett, John	September 24, 1867.
Swett, Mrs. Mary L.	December 27, 1866.
Swezey, S. I. C.	November 29, 1867.
Tait, George	December 27, 1866.
Taylor, Robert	December 27, 1866.
Templeton, Miss L. S.	December 13, 1872.
Templeton, M. L.	November 29, 1867.
Thompson, Miss Helen	June 3, 1872.
Thurber, A.	November 11, 1871.
Thurston, E. T.	May 21, 1869.
Trafton, Dr. A.	November 11, 1871.
Upham, Isaac	May 21, 1869.
Warren, C. G.	November 25, 1869.
Warren, R. B.	July 12, 1870.
Waterman, S. D.	November 11, 1871.
Watson, Mrs. C. R.	December 13, 1872.
Watson, Miss Mary J.	June 3, 1872.
Weir, Miss Sarah J.	December 15, 1868.
Wells, Mrs. Laura H.	March 14, 1871.
Wermuth, Hamilton	March 14, 1871.
White, Silas A.	November 11, 1871.
White, T. B.	December 13, 1872.
White, William	June 20, 1868.
Williams, W. J. G.	November 25, 1869.
Wilson, H. R.	March 14, 1871.
Wood, Mrs. E. A.	June 3, 1872.
Woodruff, Miss Frances A.	July 12, 1870.

Educational Diplomas.

Name.	Expires.
Abbott, J. P	November 29, 1873.
Adams, Oliver M	January 2, 1874.
Adams, W. J	January 20, 1879.
Aldrich, Abbie F	April 6, 1878.
Allen, R. H	May 13, 1873.
Ames, Martha	May 13, 1879.
Anderson, C. A	July 9, 1876.
Ashbrook, M. V	July 16, 1876.
Ashbrook, T. P	June 13, 1877.
Ashley, Miss Julia V	February 11, 1879.
Baldwin, Miss Nellie S	October 2, 1875.
Banks, Jerome	July 10, 1878.
Barnard, Miss Abbie S	February 3, 1878.
Barr, Miss Sarah A	October 2, 1875.
Barthelow, Mrs. A. W	April 15, 1877.
Batchelder, H. T	October 8, 1873.
Bennett, Miss Fannie E	May 2, 1874.
Bennett, Miss Mary H	January 20, 1879.
Biggs, Thomas	July 18, 1874.
Boardman, C. F	November 13, 1875.
Bolton, Miss H	October 4, 1877.
Bragg, Miss Mary J	April 4, 1874.
Brier, K. W	September 30, 1877.
Brierly, John R	July 5, 1873.
Brigham, Miss Fannie E	July 10, 1878.
Brigham, Miss Julia P	October 22, 1876.
Brophy, M	June 16, 1877.
Brown, A. G	August 27, 1876.
Brown, Miss J. B	March 22, 1879.
Brown, Sarah E	April 8, 1877.
Bryant, Miss Annie	March 22, 1879.
Buckman, F. S. S	April 6, 1878.
Bunnell, Mrs. Alice	April 6, 1878.
Burke, Lizzie	November 27, 1878.
Burt, Mrs. E. C	May 13, 1873.
Campbell, F. N	January 28, 1873.
Carey, Miss Susie D	April 18, 1874.
Carr, Ezra	September 16, 1876.
Carr, M. D	July 3, 1874.
Castelhun, Miss Mary A	October 8, 1876.
Chalmers, Miss Agnes	May 15, 1875.
Chalmers, Miss Annie B	May 27, 1877.
Chase, Miss Carrie M	November 25, 1877.
Clark, M. C	March 5, 1876.
Clark, W. J	July 10, 1878.
Clarke, Charles Russell	August 30, 1873.

Educational Diplomas—Continued.

Name.	Expires.
Clay, William T	January 13, 1877.
Collins, Miss Kate	March 14, 1874.
Connolly, J. J	June 16, 1877.
Cooke, Miss Hannah	May 27, 1877.
Coulter, Leonard	October 15, 1876.
Craven, Andrew F	July 10, 1878.
Crawford, T. O	July 9, 1877
Crocker, Miss L. H	July 10, 1878.
Crossette, F. M	August 27, 1873.
Crowhurst, William	November 19, 1876.
Culbertson, Mary K	February 3, 1878.
Daniels, Mrs. S. B	October 5, 1878.
Davis, Mrs. Imogene	May 13, 1879.
Davis, J. T	June 13, 1877.
Davis, Miss Sadie	January 21, 1877.
Deetken, Mrs. Lizzie G	May 15, 1875.
Dodge, William C	July 5, 1873.
Dolliver, Miss Clara G	October 28, 1877.
Dooner, John	January 13, 1877.
Doud, Miss Nettie	July 10, 1875.
Dozier, A. W	October 5, 1878.
Dozier, Melville	April 20, 1878.
Dunbar, S. G. S	October 4, 1877.
Dyer, James O	November 11, 1877.
Eaton, Emily T	February 2, 1873.
Eickhoff, J. Henry	August 27, 1876.
Estabrook, Miss Mary A. H	July 24, 1875.
Evans, Miss Ellen A	December 20, 1875.
Evans, Miss Ellen G	February 5, 1876.
Fairchild, Miss Hattie M	February 25, 1877.
Fallon, Joseph K	June 19, 1877.
Fenton, H. W	September 16, 1877.
Field, Miss Carrie P	June 12, 1875.
Fink, Miss A. P	January 27, 1877.
Fisk, Juliet A	March 22, 1879.
Flood, Mrs. Frank	September 17, 1873.
Folger, Miss H. C	November 27, 1878.
Fonda, Chas. E	July 9, 1877.
Foster, Mrs. E	February 11, 1877.
Foster, Mrs. Julia	May 26, 1876.
Fox, John	July 29, 1877.
Fox, Miss Sarah E	May 15, 1875.
Frissell, Miss Sarah E	April 6, 1878.
Furlong, George	November 11, 1877.

Educational Diplomas—Continued.

Name.	Expires.
Garbrick, N. B.	June 9, 1874.
Geis, S. W.	July 10, 1878.
Germain, Miss Clara	May 13, 1879.
Gillespie, E. J.	July 3, 1874.
Goepp, G.	January 3, 1879.
Godfrey, G. K.	November 19, 1876.
Gordon, Wellington	November 13, 1875.
Gould, Miss M. J.	January 27, 1877.
Granger, F. C.	September 16, 1877.
Grant, Miss Ellen G.	January 8, 1876.
Grear, Miss Jane E.	February 11, 1877.
Gunn, Miss E. L.	May 13, 1877.
Gunn, Sarah W.	April 16, 1876.
Guthrie, N. L.	May 7, 1876.
Hall, Miss Annie J	February 19, 1876.
Ham, Chas. H.	April 20, 1878.
Hamilton, Miss Addie	October 29, 1876.
Hammond, Josiah S.	May 28, 1874.
Harkness, Miss Margaret	December 3, 1876.
Harmon, Silas S.	February 13, 1875.
Harris, Mary R.	July 5, 1873.
Hayes, John	July 9, 1877.
Henning, Irving P.	February 19, 1876.
Hewitt, Roscoe	October 5, 1878.
Higby, H. C.	January 3, 1879.
Hoffman, Mrs. Mary L.	July 22, 1877.
Howard, Emma	July 10, 1878.
Howe, Converse	March 5, 1876.
Howe, E. P.	January 20, 1879.
Howell, S. S.	July 10, 1878.
Hucks, Miss Annie E.	October 2, 1875.
Hubbell, S. C.	January 16, 1878.
Humphreys, Miss L. A.	November 27, 1878.
Humphreys, Miss M. A.	November 27, 1878.
Hunt, B. E.	September 26, 1874.
Huntley, O. H.	October 8, 1873.
Hurley, Miss J. M.	July 16, 1876.
Hutton, Chas. E.	October 15, 1876.
Itsell, A. J.	December 19, 1876.
Jacks, Miss Fannie	March 22, 1879.
Janes, Miss Emma	December 31, 1875.
Jewett, Miss Annie S.	July 9, 1877.
Jewett, Miss Fidelia	May 27, 1877.
Jones, Addison	September 16, 1877.
Jones, J. T.	March 11, 1877.

Educational Diplomas—Continued.

Name.	Expires.
Jordon, John F	November 18, 1877.
Joy, Miss Mary E	March 21, 1874.
Kellogg, Martin	May 6, 1873.
Kellogg, M. D	October 22, 1876.
Kerr, Theodore T	October 22, 1876.
Kincaid, Mrs. Mary W	September 10, 1876.
King, Chas. E	March 22, 1879.
King, R. M	May 13, 1877.
Kirkland, Thomas	September 17, 1873.
Kottinger, H. M	February 10, 1878.
La Grange, O. H	July 5, 1873.
Lamb, Miss Irene	April 20, 1878.
Lannon, James W	July 7, 1874.
Laurie, Miss B. M	January 20, 1879.
Levy, Daniel	July 10, 1878.
Libby, Mrs. Jos. S	July 23, 1876.
Lillie, Miss Sarah P	September 16, 1877.
Loag, Emily T	April 2, 1876.
London, J	November 27, 1878.
Loutlit, J. A	November 29, 1873.
Lovett, Chas. E	July 10, 1878.
Lubeck, Miss Julia M	April 24, 1875.
Lyser, Albert	February 8, 1874.
Magoon, Wm. H	March 22, 1879.
Manning, Miss Agnes M	April 29, 1877.
Martin, A	February 25, 1877.
McArthur, Miss Annie	September 16, 1877.
McCarty, A. P	October 9, 1873.
McCarty, Thos	July 9, 1877.
McColgan, Kate F	October 5, 1878.
McCormack, Harriet T	August 20, 1876.
McDonald, Mrs. N. R	December 20, 1875.
McGlashen, C. F	July 10, 1878.
McManus, A. C	July 16, 1876.
McPhee, Miss V. J	March 22, 1879.
McReynolds, Joe	November 18, 1877.
Mea, John F	June 7, 1876.
Megerle, Louis J	April 2, 1875.
Merrill, Miss Mary E	November 29, 1873.
Metzger, C. L	September 16, 1877.
Middleton, A. W	October 4, 1877.
Middleton, Mrs. Eliza F	October 4, 1877.
Miller, John	April 8, 1877.
Miller, Lafayette	April 8, 1877.
Miller, Miss N. J	November 25, 1877.

Educational Diplomas—Continued.

Name.	Expires.
Milliken, Mrs. E. A	July 22, 1877.
Mitchell, Miss Fannie	October 22, 1876.
Mondram, F. V. C.	July 9, 1877.
Moore, Mrs. B. F.	July 10, 1878.
Morgan, Miss Mary J	February 6, 1875.
Morris, Henry Z.	November 11, 1877.
Murphy, Miss Mary	February 25, 1877.
O'Connor, Miss Maria	March 8, 1879.
Otis, C. W	April 28, 1876.
Overend, Miss E.	February 11, 1877.
Owens, Miss Nellie M.	June 13, 1877.
Page, Miss Lizzie	November 18, 1877.
Pearson, D. C.	November 29, 1873.
Pearson, Sarah R.	November 29, 1873.
Peck, A. W.	July 10, 1875.
Penwell, Mrs. L. M.	November 18, 1877.
Phelps, Joshua	February 1, 1874.
Phelps, Mrs. M. W.	May 15, 1875.
Powell, David	August 5, 1876.
Powell, Miss Elizabeth	July 10, 1878.
Prag, Mrs. Mary	October 5, 1878.
Putman, J. E.	July 10, 1878.
Ray, J. H.	March 5, 1876.
Rattan, Volney	November 5, 1873.
Renfro, Lewis C.	October 24, 1874.
Rice, L.	July 9, 1877.
Ritchie, Miss Mary J.	July 3, 1874.
Robertson, William A.	January 8, 1876.
Rogers, Arthur	April 8, 1877.
Rogers, James	April 6, 1878.
Roper, J. W.	July 29, 1877.
Royal, J. P.	March 13, 1875.
Scott, M. M.	January 25, 1874.
Sears, Miss Marion	February 25, 1877.
Seawell, J. H.	January 20, 1879.
Shearer, Mrs. C. C.	January 13, 1877.
Shelley, Troy	May 28, 1874.
Sherman, E. B.	July 9, 1877.
Short, Miss Julia B.	May 27, 1877.
Sill, E. R.	January 20, 1879.
Sinex, J. H.	January 20, 1879.
Smith, Miss Flora E.	July 3, 1874.
Smith, James D.	November 6, 1877.
Smith, Miss Jessie	August 8, 1874.

Educational Diplomas—Continued.

Name.	Expires.
Smyth, Charles S.	May 15, 1875.
Squires, W. E.	October 2, 1877.
Stegman, Miss Mattie A.	August 6, 1876.
Stirling, J. F.	October 8, 1873.
Stincen, Miss Alice M.	November 29, 1873.
Stoddard, Charles W.	October 2, 1877.
Stone, W. W.	July 10, 1878.
Stowell, F. A.	February 11, 1879.
Sumner, John H.	February 3, 1878.
Temple, Miss Emma.	May 13, 1879.
Thomas, J. R.	February 25, 1877.
Tibbey, Miss Emily M.	May 15, 1875.
Todd, H. J.	July 9, 1877.
Towle, C. B.	August 6, 1876.
Towle, Mrs. Lizzie B.	January 13, 1877.
True, Charles F.	October 5, 1878.
Underwood, J. G.	January 7, 1877.
Van Schaick, L. H.	November 29, 1873.
Van Schaick, Mrs. Mary A.	May 13, 1879.
Vestal, F. A.	July 10, 1878.
Wade, Miss M.	August 5, 1877.
Walker, Miss Alice.	September 23, 1877.
Wanzer, Mrs. L. M. F.	April 6, 1878.
Waters, Mrs. C. K.	July 10, 1875.
Watkins, Emory.	January 20, 1879.
Watson, B. J.	November 6, 1875.
Welch, B. F.	July 5, 1873.
Westbay, Miss L. M.	July 16, 1876.
Weston, Miss Ada.	January 16, 1878.
Wheelock, Mrs. D. R.	December 13, 1877.
White, Emmons.	February 19, 1876.
Whitmore, Ella L.	May 13, 1879.
Wilson, James K.	March 19, 1876.
Wright, Mrs. E.	April 8, 1877.
Wood, Jesse.	October 22, 1876.
Yates, W. A.	April 4, 1874.
Yule, John.	August 5, 1876.
Zimmerman, William.	December 19, 1876.

First Grade Certificates.

Name.	Expires.
Ables, Thos. J.	July 16, 1874.
Alderson, Miss M. J.	March 22, 1877.
Allison, Arminta E.	March 10, 1874.
Anderson, Geo. P.	July 9, 1874.
Ashby, J. P	October 1, 1874.
Ashley, Miss Florence	December 13, 1875.
Ashton, Jno.	April 2, 1877.
Atkinson, Horatio N	June 16, 1874.
Aubrey, Mrs. Emily	April 6, 1876.
Avery, Miss Sarah	March 8, 1877.
Ayer, Isaac A	October 22, 1874.
Babcock, Wm. S	January 13, 1875.
Bagley, Benj. F.	August 28, 1873.
Baker, F. E	January 16, 1876.
Baker, Chas. W.	October 9, 1875.
Baker, Sam'l D.	July 22, 1875.
Bailey, Miss A. A.	July 22, 1875.
Baldwin, F. T	April 6, 1876.
Blake, Chas. M	July 10, 1876.
Budd, Mrs. A. S	May 7, 1874.
Black, Sam'l	June 7, 1874.
Burke, Mrs. L. K.	November 22, 1875.
Byrne, Hugh J	October 6, 1876.
Butler, Miss Kate	January 3, 1877.
Brown, Jas. B	January 20, 1877.
Bruch, Louis	March 8, 1877.
Bush, Mrs. Ellen H	May 13, 1877.
Browne, Jas.	May 13, 1877.
Bayrie, Arthur	April 15, 1875.
Benton, J. G.	May 27, 1875.
Bicknell, Bertha A.	March 10, 1874.
Betancue, Miss L	May 27, 1874.
Burrill, Mary A	March 10, 1874.
Breschen, Seraphine	July 9, 1874.
Banks, E. B	November 5, 1874.
Brown, Jno.	January 7, 1875.
Barber, Aron C.	January 27, 1875.
Boren, Miss Susie	September 23, 1875.
Blaney, Edw. W.	September 23, 1875.
Blake, Chas. E.	July 22, 1875.
Bugby, Mrs. B. N.	July 9, 1875.
Benson, J. A.	July 24, 1875.
Bangs, Vital E.	November 6, 1873.
Bonnard, Miss E. A	December 31, 1873.
Boyle, Sarah Jane	March 10, 1874.

First Grade Certificates—Continued.

Name.	Expires.
Caginn, Jesse M.	March 22, 1877.
Conmy, E. A.	March 22, 1877.
Carroll, Anna	March 8, 1877.
Cogswell, Franklin	April 6, 1876.
Connor, William	April 22, 1874.
Chestnutwood, Jno	May 27, 1874.
Cleveland, J. G.	October 30, 1875.
Carter, Miss Louisa	October 25, 1875.
Clark, Miss E. M.	January 16, 1876.
Congdon, James S.	January 16, 1876.
Creighton, Mrs. A. M.	February 11, 1877.
Cahill, Josephine	March 8, 1877.
Chipman, Samuel J.	March 8, 1877.
Crane, George	April 2, 1877.
Cottle, Annetta	April 2, 1877.
Campbell, Miss M. M.	April 2, 1877.
Cory, Miss A. A.	April 5, 1875.
Colby, Mrs. Mary A.	April 29, 1875.
Clough, Miss E. A.	June 3, 1875.
Casad, Ellen J.	July 9, 1874.
Clark, Miss Hattie G.	March 5, 1874.
Coffin, Miss Ella	August 6, 1874.
Creighton, Samuel G.	November 5, 1874.
Curragh, J. M.	December 3, 1874.
Childs, Miss Helen	January 13, 1875.
Case, E. L.	January 13, 1875.
Crowell, Abner B.	January 13, 1875.
Craig, Miss Elizabeth	July 22, 1875.
Cosgrove, P.	July 24, 1875.
Charmers, Miss Grace	July 29, 1875.
Conrad, C. C.	August 26, 1875.
Cogswell, Franklin	November 24, 1873.
Duenkel, William	April 2, 1877.
Dupuy, Marie	April 2, 1874.
Davis, R. M.	April 16, 1874.
Dunbar, S. G. S.	August 27, 1874.
DuBoise, John B.	September 24, 1874.
Douglas, Miss Emma	September 17, 1874.
Davis, I. W.	January 13, 1875.
Dunbar, Annie S.	September 16, 1875.
Dyer, Barlow	October 16, 1875.
Darby, R. R	November 6, 1873.
Dulon, Arnold	December 27, 1873.

First Grade Certificates—Continued.

Name.	Expires.
Ellis, Miss M. C.	April 2, 1877.
Ellis, Miss Nannie	April 2, 1877.
Elliot, Miss Mary	April 2, 1874.
Ewalt, Andrew J	February 11, 1874.
Evans, Miss D. M	July 22, 1875.
Edwards, W. H	September 9, 1875.
Edwards, Florence	April 16, 1874.
Finch, J. B	December 20, 1873.
Fross, William F	March 8, 1877.
Fowler, B. F	April 6, 1876.
Forbes, Miss Jennie A	October 31, 1875.
Freeman, G. N	January 20, 1877.
Fablinger, Lewis	May 28, 1877.
Fitzgerald, Nehemiah	April 15, 1875.
Flint, Miss Almina	May 13, 1875.
Fohey, Katie J	July 9, 1874.
Foster, Mrs. Emily	February 19, 1874.
Frout, Daniel	February 19, 1874.
Footman, Henry E	March 22, 1877.
Finlayson, C. T	July 9, 1874.
Grigsby, Miss Florence	July 22, 1875.
Gibson, Anna Adelia	March 10, 1874.
Green, Miss Emily F	March 10, 1874.
Garvey, J. B	May 27, 1874.
Ginn, James M	October 16, 1873.
Glasgow, Miss Mary V	January 24, 1873.
Goodcell, Henry	March 8, 1877.
Gabriels, Mrs. C. E	April 6, 1876.
Gummer, Lillie A	November 25, 1875.
Granger, F. C	July 9, 1874.
Gray, Bella R	March 5, 1874.
Garlick, Joshua P	March 5, 1874.
Goucher, G. G	April 2, 1877.
Grasty, Thomas P	March 8, 1877.
Hewitt, Rose	July 22, 1875.
Henderson, John	July 22, 1875.
Hailer, Lizzie	July 22, 1875.
Hamilton, Rev. H	August 12, 1875.
Hamilton, H. M	August 12, 1875.
Howard, George W	September 23, 1875.
Hopkins, Miss Amy A	October 26, 1875.
Hamilton, Mrs. M. J	December 20, 1873.
Hallowell, Miss B	December 31, 1873.
Holmer, M. D	October 6, 1876.
Hanks, Miss C. M	November 27, 1876.

First Grade Certificates—Continued.

Name.	Expires.
Hunt, S. M.	January 20, 1877.
Hazen, P. J.	January 20, 1877.
Hawks, Miss Emma A.	January 20, 1877.
Head, Mrs. E. C.	June 3, 1875.
Hurlburt, Isaiah	June 19, 1875.
Haswell, Miss M. A.	June 19, 1875.
Hawkins, J. V.	May 13, 1877.
Housechild, Anita	December 19, 1874.
Hughes, Wesley	April 16, 1874.
Hughes, A. B.	August 7, 1873.
Howell, Thomas K.	August 7, 1873.
Harris, Dora B.	March 8, 1877.
Hendrix, Mary	March 8, 1877.
Hiatt, Pleasant	March 8, 1877.
Howell, Mark	April 6, 1876.
Howell, Henry H.	November 6, 1875.
Haislip, Benj. F.	November 6, 1875.
Hudson, J. A.	July 9, 1874.
Howe, Albion J.	July 23, 1874.
Howard, Miss Maggie	February 5, 1874.
Hall, Miss Sallie	February 19, 1874.
Hendry, Maggie	March 22, 1877.
Holbrook, Edw	March 22, 1877.
Ingraham, Mrs. R. F.	March 25, 1875.
Jones, E. Benton	April 2, 1877.
Jones, W. H.	July 10, 1876.
Jacobs, Miss Jennie S.	October 5, 1876.
Jones, Carey W.	March 8, 1877.
Jewett, Miss Fidelia	June 7, 1874.
James, Mrs. J. L.	April 2, 1874.
Johnson, Jno. A.	April 16, 1874.
Johnson, G. W.	January 13, 1875.
Jones, Sarah M	May 13, 1877.
Jamison, J. H. S.	May 13, 1877.
Jenks, David W.	April 2, 1877.
Jenkins, Chas. S.	September 23, 1875.
Jackson, Miss Sarah	August 13, 1874.
Jenks, D. W.	July 22, 1875.
Johnson, Jos. W.	April 15, 1875.
Kelsey, Miss N. M.	November 27, 1876.
Kimball, Miss Mary J.	October 26, 1875.
Kimball, C. H.	April 2, 1877.
Kelso, Jno.	July 10, 1876.
Kratzer, Lella	March 8, 1877.
Kelso, Luella	March 8, 1877.

First Grade Certificates—Continued.

Name.	Expires.
Kimball, Miss Mary S.	March 8, 1877.
Knighton, Wm. A.	January 13, 1875.
Knowlton, E. L.	October 16, 1875.
Kennedy, J. F.	October 22, 1874.
Kearney, Auther.	July 22, 1875.
Kendall, Sylvina A.	July 9, 1874.
Leadbetter, Irene E.	July 9, 1874.
Lafferty, I. N.	July 9, 1874.
Lane, Jno. D.	July 16, 1874.
Law, Jno. K.	February 19, 1874.
Lafferty, J. L.	March 5, 1874.
Leppien, Miss Dora.	January 3, 1877.
Ledyard, J. L.	January 3, 1877.
Lynde, W. A.	October 20, 1875.
Lampkin, Henry L.	November 25, 1875.
Lowe, Sarah E.	March 22, 1877.
Lambert, Daniel	March 22, 1877.
Lynch, W. F. B.	March 8, 1877.
Little, Miss Mary J.	August 28, 1873.
Lillie, J. B.	December 19, 1874.
Loop, Mrs. S. J.	March 11, 1875.
Lynch, Tilly	July 24, 1875.
Lander, F. L.	August 26, 1875.
Lloyd, Mary A.	October 4, 1875.
Lyons, Miss Hattie A.	October 22, 1874.
Ludlum, Mrs. Evlyn M.	June 22, 1875.
Ley, Miss Mary A.	November 6, 1873.
Murnan, John T.	January 16, 1876.
McDonald, W. P.	April 6, 1876.
Morford, Nathan A.	April 6, 1876.
Meek, Annie P.	April 6, 1876.
McConnell, James I.	July 10, 1876.
Miller, Annette	May 7, 1874.
McNiel, Miss A. E.	May 20, 1874.
Miller, Miss E. O.	January 16, 1874.
Miller, Charles N.	April 15, 1875.
Messinger, H. H.	April 15, 1875.
Martin, J. M.	April 2, 1877.
McLafferty, B. S.	May 13, 1877.
Maroon, Amelia A.	March 10, 1874.
Montgomery, Alberta S.	March 10, 1874.
McKowan, John C.	April 16, 1874.
McGowan, Patrick H.	April 16, 1874.
McKean, Miss Lottie	July 9, 1874.
McKean, Anna Mary	March 10, 1874.
Metzger, Charles L.	January 7, 1875.

First Grade Certificates—Continued.

Name.	Expires.
Martin, Charles A	February 25, 1875.
McGollam, Miss Lizzie	April 6, 1874.
Morse, Miss Fannie	September 17, 1874.
Morris, Henry D	October 1, 1874.
Mitchell, Miss Jennie	October 8, 1874.
Mattick, J. N	November 27, 1876.
Merritt, Miss Julia E	January 20, 1877.
MacIntire, W. E	October 20, 1875.
McLean, Robert A	November 6, 1875.
Marks, Charles H	November 11, 1875.
McLean, Miss Christine	November 18, 1875.
Morey, Sabie	March 22, 1877.
Minta, Wesley	March 22, 1877.
Montgomery, Alberta S	March 22, 1877.
Marvin, Miss Adella	March 22, 1877.
Merritt, Mary	March 8, 1877.
Merritt, Isabella	March 8, 1877.
Martin, Julia	March 8, 1877.
Murdock, Ella	March 8, 1877.
McMeans, A. C	July 24, 1873.
Menefee, Mrs. C. A	August 28, 1873.
MacFarlan, Robert	October 2, 1873.
Miller, J. H	July 24, 1875.
McConnell, Miss Delia	September 16, 1875.
McNamara, W. N	July 22, 1875.
Morgan, R	July 22, 1875.
Nixon, Evelyn	April 1, 1875.
Northcutt, Cary A	May 13, 1877.
Norman, Lew	October 26, 1875.
Nichell, Ellen	July 24, 1875.
O'Dwyer, James	August 5, 1874.
O'Rogers, L	August 6, 1874.
Ogelvie, Miss Charlotte A	January 7, 1875.
Oglesby, Miss Marian A	May 20, 1874.
O'Laughlin, Miss N	June 7, 1874.
Owen, Miss Georgie	April 2, 1877.
O'Niel, M. A	May 13, 1877.
O'Niel, Mary H	January 20, 1877.
Palmer, Miss R. M	August 26, 1875.
Perkins, Agnes E	October 4, 1875.
Pendegast, H. B	January 27, 1876.
Pedler, F. M	July 10, 1876.
Palmer, Emma S	March 25, 1875.
Palmer, Miss Annie M	March 5, 1874.
Pugh, Miss F. M	November 25, 1875.

First Grade Certificates—Continued.

Name.	Expires.
Williams, Geo	November 6, 1873.
Wemple, E. L	December 3, 1874.
Wells, J. H	January 13, 1875.
Wenke, R. E	February 11, 1875.
Whitworth, F. H	October 26, 1875.
Wythe, Miss Sarah S	October 27, 1875.
Walsh, Miss Nellie E	November 18, 1875.
Wilson, H. C	November 25, 1875.
Wallace, W. B	November 25, 1875.
Wozencraft, W. R	December 13, 1875.
Wheeler, Miss Millie	May 13, 1877.
Webb, Miss Sallie B	June 22, 1875.
Wenk, R. E	July 22, 1875.
White, Miss Louisa E	July 22, 1875.
Wibble, Annie	July 22, 1875.
Warren, J. M	July 24, 1875.
Wicks, Jno. T	July 9, 1874.
Woodard, Marion W	July 9, 1874.
Woods, Jas. L	January 16, 1876.
Wible, Miss Julia F	January 16, 1876.
Withington, Augusta	March 8, 1877.
White, A. F	April 2, 1877.
Wright, J. M	April 2, 1877.
Wilcox, Miss Celia F	November 27, 1876.
Webber, Fred E	January 20, 1877.
Ward, Miss Mary	May 27, 1874.
Woodruff, Miss Frances	June 16, 1874.
Woodworth, Mrs. J. E	July 9, 1874.
White, Miss Mary J	March 5, 1874.
Woodworth, Miss Mary	March 25, 1875.
Wheaton, Miss Clara	April 1, 1875.
Woods, H. M	April 15, 1875.
Witt, Thos. J	August 28, 1873.
White, Jas. S	July 24, 1873.
Welch, Wm. P	August 6, 1874.
Watson; Miss Lizzie	October 8, 1874.
Yates, Miss Lizzie	January 13, 1875.
Yates, Miss Jennie	July 10, 1873.
Young, Nestor A	February 19, 1874.
Zumwalt, D. K	August 28, 1873.

Second Grade Certificates.

Name.	Expires.
Abbott, Adam B	July 22, 1873.
Ambrose, Miss C. D	July 10, 1874.
Anderson, Christina	March 22, 1876.
Arter, Miss Florence	February 3, 1874.
Auld, Eliza	March 22, 1876.
Ball, Miss Ella M	April 6, 1874.
Barry, Miss Sarah D	November 18, 1873.
Beach, Sarah S	March 22, 1876.
Bennett, Minnie E	March 22, 1876.
Bills, Miss R. Allie	November 27, 1874.
Birdsell, Miss Rebecca	February 11, 1876.
Bixby, Miss E. P	April 2, 1876.
Brown, L. L	July 0, 1873.
Campbell, Ruth G	February 3, 1874.
Carpenter, Mattie E	October 5, 1874.
Casey, Miss Joanna T	October 5, 1874.
Chapman, Aldelbert R	March 22, 1876.
Chipman, Lucy	March 22, 1876.
Clark, A. N	September 16, 1873.
Clark, Robt. M	April 6, 1874.
Clark, Miss Lottie K	April 6, 1874.
Clark, James Edward	April 20, 1874.
Clearly, Louise E	March 22, 1876.
Cole, Miss C. A	April 2, 1876.
Collins, Miss Mary	November 18, 1873.
Congdon, Miss A. R	February 11, 1876.
Cornelius, Z. E	October 5, 1874.
Deuel, Mrs. Hattie	November 25, 1873.
Donovan, Miss Kate M	November 6, 1873.
Dose, Miss Anna M	July 12, 1873.
Fairchild, Miss Fannie R	November 11, 1873.
Forsyth, Miss E	November 11, 1873.
Galusha, N. H	November 25, 1873.
Gelston, Miss J. M	August 5, 1873.
Givens, Louise M	March 22, 1876.
Graffelman, Miss L	January 27, 1874.
Graham, Estelle E	March 22, 1876.
Guild, Pacific	March 22, 1876.
Haas, Miss A. E	July 10, 1874.
Hankenson, John R. R	April 6, 1874.
Hardy, Miss Irene	July 10, 1874.

Second Grade Certificates—Continued.

Name.	Expires.
Ray, Carrie L.	April 2, 1876.
Ray, Maria.	March 22, 1876.
Riley, James A.	March 22, 1876.
Rise, Mrs. Mary W.	December 13, 1873.
Russell, Ella.	March 22, 1876.
Russell, Mary C.	April 2, 1876.
Savage, Miss Fannie.	January 16, 1874.
Savage, Miss N. H.	August 7, 1873.
Sheldon, Miss Jennie.	February 11, 1876.
Simons, Miss Mary P.	April 2, 1876.
Simonton, Miss Sophia A.	May 28, 1876.
Simpson, J. D.	July 29, 1873.
Simpson, J. M.	January 27, 1874.
Smith, Miss Maggie E.	September 16, 1873.
Smith, Miss M. V.	January 20, 1876.
Spencer, Miss Rebecca	April 6, 1874.
Sprott, Miss Maggie.	April 6, 1874.
Stockton, Alice.	March 22, 1876.
Stone, Miss Carrie O.	September 23, 1873.
Strawbridge, Miss Viola.	May 28, 1876.
Swain, Orlando E.	October 26, 1873.
Tanner, Miss Olive D.	February 3, 1874.
Treadwell, W. B.	January 16, 1874.
Trumbull, Miss Maggie S.	August 19, 1873.
Tucker, Mrs. E. R.	April 2, 1876.
Turner, Cynthia M.	April 2, 1876.
Underwood, Mrs. N. W.	November 18, 1873.
Vane, Miss Martha A.	November 25, 1873.
Vincent, Mrs. M. M.	April 6, 1874.
Wainright, Charles C.	January 16, 1874.
Wators, Miss Mercy C.	October 31, 1873.
Webb, James W.	October 26, 1873.
Weir, Helen.	January 27, 1874.
White, Clarence M.	October 5, 1874.
White, Miss J.	July 24, 1873.
Willis, William L.	January 16, 1874.
Wilson, Miss Jessie E.	April 6, 1874.
Wilson, Miss Sarah.	July 10, 1874.
Winn, Miss Lizzie.	August 12, 1873.
Wright, Abbie P.	October 16, 1873.
Young, Lenore P.	March 22, 1876.

Third Grade Certificates.

Name.	Expires.
Adams, Miss Cathella	January 3, 1875.
Allen, Miss Laverna	February 11, 1875.
Auld, Cecilia	March 8, 1875.
Brannon, Miss Belle	February 11, 1875.
Brier, Mary	October 5, 1873.
Brown, Amy	March 22, 1875.
Callsen, Miss Helena	February 11, 1875.
Carr, Ursula A	March 22, 1875.
Castle, Hattie E	May 13, 1875.
Chart, Miss Christine	October 5, 1873.
Clark, Miss Ella A	July 10, 1873.
Day, Frances M	March 22, 1875.
Evans, Miss Marion	October 5, 1873.
Gibbons, Ruby A	March 22, 1875.
Greenleaf, Annette	January 3, 1875.
Harris, Lizzie G	March 22, 1875.
Hogan, Miss M. E	March 8, 1875.
Hoyt, Miss Lizzie	January 20, 1875.
Hucklebein, Josie	March 22, 1875.
Intermille, Rosa	March 22, 1875.
Jones, Nellie R	March 22, 1875.
Keifer, Sallie E	March 22, 1875.
Ketchum, Adie	March 22, 1875.
Lelong, Lottie	March 22, 1875.
McLean, Mrs. Anna	May 13, 1875.
Olinger, Nevada	March 22, 1875.
Pumell, Elizabeth B	October 5, 1873.
Reed, Helen	March 22, 1875.
Rockwood, Josephine	April 2, 1875.
Ross, Jane	October 5, 1873.
Scott, Miss Hallie	April 2, 1875.
Sherman, Miss Julia E	February 11, 1875.
Stockton, Adelia	March 22, 1875.

Third Grade Certificates—Continued.

Name.	Expires.
Thompson, Belle E.	March 22, 1875.
Van Deusen, Miss M.	May 28, 1875.
Wainwright, Susan	October 5, 1873.
White, Annie F.	March 22, 1875.
Wood, Miss Susie M.	July 10, 1873.

Supplementary list of State Certificates and Diplomas granted from July first to November first, eighteen hundred and seventy-three.

Educational Diplomas.

Name.	Expires.
Bissell, Joseph	August 30, 1879.
Chestnutwood, Mrs. J. A.	July 22, 1879.
Huntsinger, Mrs. Jennie	July 22, 1879.
Ingraham, B. F.	July 22, 1879.
Jaycoax, Mrs. A. S.	July 22, 1879.
Law, John K.	July 22, 1879.
Oliver, A. W.	July 22, 1879.
Oliver, Mrs. C. F.	July 22, 1879.
Ryan, Miss Amanda	August 4, 1879.
Thompson, J. N.	July 22, 1879.
Thurton, M. S. L.	August 30, 1879.
Wallace, W. B.	July 22, 1879.
Walsh, Miss Nellie E.	August 30, 1879.
Watson, Miss Lizzie J.	July 22, 1879.

First Grade Certificates.

Name.	Expires.
Anderson, D. M.	October 18, 1877.
Anderson, Miss May	October 18, 1877.
Babcock, Milton St	October 18, 1877.
Bannan, Miss Maggie	August 30, 1877.
Barrett, Dora J	August 30, 1877.
Beasley, E. C	October 18, 1877.
Benjamin, Miss J. I	July 22, 1877.
Blakely, James O	October 18, 1877.
Brooks, Miss Addie	August 30, 1877.
Brown, George J	October 18, 1877.
Buckman, A. E	August 4, 1877.
Bush, Solomon	July 22, 1877.
Crane, Amanda	October 18, 1877.
Dakin, William J	August 4, 1877.
Dascomb, Charles	July 22, 1877.
De Nure, D. D	October 18, 1877.
Fahey, Maggie	August 4, 1877.
Fiske, H. W	August 4, 1877.
Fowler, D. F	July 22, 1877.
Greer, Miss M. L	August 30, 1877.
Haley, William T	July 22, 1877.
Hammel, Mrs. A. H	July 22, 1877.
Hanson, A. J	August 4, 1877.
Harrington, Maggie J	August 4, 1877.
Hatch, J. L	July 22, 1877.
Heckman, H. H	October 18, 1877.
Hinton, J. W	July 22, 1877.
Holdsworth, Martha A	August 4, 1877.
Holton, George M	October 18, 1877.
Johnston, Miss Clara	July 22, 1877.
Knight, Ed. D	July 22, 1877.
Lipowitz, M	August 4, 1877.
Lynch, Mary E	July 22, 1877.
Martin, A. F	October 18, 1877.
McEwen, Jno	July 22, 1877.
McHugh, Peter	October 18, 1877.
Nolen, M. J	August 4, 1877.

First Grade Certificates—Continued.

Name.	Expires.
Paulk, Charles A	August 4, 1877.
Preston, Benjamin T. K	October 18, 1877.
Price, Harrison	October 18, 1877.
Poindexter, Robert W	July 22, 1877.
Redding, Miss Dora C	October 18, 1877.
Redway, Jacques W	August 4, 1877.
Reed, Dayton A	October 18, 1877.
Robinson Jos. W	October 18, 1877.
Salisbury, Mary A	July 22, 1877.
Saunders, Samuel	August 4, 1877.
Saxon, T. A	August 4, 1877.
Sproul, Etha F	October 18, 1877.
Tuttle, W. S	August 4, 1877.
Wakefield, Maria M	October 18, 1877.

Second Grade Certificates.

Name.	Expires.
Abbott, A. B	October 18, 1876.
Anderson, Jennie M	October 18, 1876.
Bainbridge, Mrs. A. C	July 22, 1876.
Barey, Eliza E	October 18, 1876.
Campbell, Miss A. E	October 18, 1876.
Clason, Rollo S	August 4, 1876.
Cowie, Annie B	August 4, 1876.
Dake, Mrs. L. M	July 22, 1876.
Dorn, N. A	August 4, 1876.
Fuller, Mary L	August 4, 1876.
Henderson, W. H	October 18, 1876.
Huntley, Miss A. H	July 22, 1876.
Lucas, William T	August 4, 1876.

Second Grade Certificates—Continued.

Name.	Expires.
Martin, A. E.	August 4, 1876.
McConnell, Harriet	October 18, 1876.
McPherson, W. G.	August 4, 1876.
Morgan, H. J.	August 4, 1876.
Morgan, Rose E.	October 18, 1876.
Ortega, Dario M.	August 4, 1876.
Root, Miss A. M.	August 4, 1876.
Root, Ellis	August 4, 1876.
Seeley, Miss Nora H.	October 18, 1876.
Titus, F. H.	August 4, 1876.
Weed, Miss Alice	July 22, 1876.
White, Mattie H.	October 18, 1876.

Third Grade Certificates.

Name.	Expires.
Collins, Miss Cynthia A.	October 18, 1875.
Fairchild, Mary	August 4, 1875.
Fennell, Miss Lizzie	August 4, 1875.
Fleming, Miss Katie	August 4, 1875.
Hicks, Mrs. M. G.	October 18, 1875.
Hunter, Miss Libbie	August 4, 1875.
McCarty, Nannie I. J.	October 18, 1875.
Reynolds, Miss Minnie	October 18, 1875.

IV.—STATE UNIVERSITY.

V.—STATE NORMAL SCHOOL.

VI.—INSTITUTION FOR THE DEAF, DUMB, AND THE BLIND.

UNIVERSITY OF CALIFORNIA.

The University of California is now permanently located at Berkeley. The site is situated four miles to the north of the City Hall, in Oakland. It includes about two hundred acres of land, which lie on the western declivity of a Mt. Diablo group of mountains, at an elevation varying from two hundred to eight hundred and eighty-seven feet above the sea level. The bench mark of the south college is three hundred feet above mean high water, and this is nearly the altitude of the principal spots selected for building. The property is traversed by two creeks, the larger one of which, on the south, is known by the name of Strawberry Creek. The surface is much diversified, and affords excellent locations for all the necessary buildings of the University, and for the cultivation of trees, shrubs, and other plants, as well as for experiments in agriculture and horticulture. Its natural beauties and its fine outlook toward the Bay of San Francisco and the Golden Gate are already well known.

In the Spring of eighteen hundred and seventy-three, the Regents requested Professor Davidson, of the United States Coast Survey, to cause a plane table survey of the grounds to be made. This was executed at once by Mr. Cleveland Rockwell, of the United States Coast Survey.

The gardener of the public grounds at the Capitol, Mr. Ellis, was also consulted, and a written report was received from him on the treatment of the grounds. Subsequently, the Regents requested Mr. William Hammond Hall, the Engineer of the Golden Gate Park, to give them his advice and coöperation in the grading and development of the property. He has made a beginning in the immediate vicinity of the public buildings, and will go forward with the work as rapidly as the funds are provided.

A survey of the boundary lines of the University property is now in progress.

The classes in Civil Engineering have begun, also, an elaborate topographical map of the grounds, which will be the work of several years, and will give them good practice in the science and art to which they are devoted, and will be of constant service in the development of property.

The two new edifices constructed by the liberality of the State at Berkeley, are now occupied by the classes, and are found to be well

adapted to the wants of the institution. They were designed by David Farquharson, Esq., architect of San Francisco, and one of the two was constructed under his immediate supervision. The other building was constructed under the direction of the Building Committee of the Regents, who made some changes in the original design. These structures are sufficient for the most pressing necessities of the University; but as the institution increases in the number of teachers and scholars, further accommodations will be necessary. Separate buildings for the library and museum will be among the earliest wants to be supplied. When Mr. Farquharson's plans were originally adopted, it was thought that separate buildings might be soon put up for the several Colleges of Agriculture, Mining, Mechanic Arts, Civil Engineering, Letters, etc., into which it was intended that the University should be subdivided, and accordingly the building first constructed bore the name of the College of Agriculture, and the second one the name of the College of Letters. For the present, however, the cost of such a variety of buildings has not been provided for. Moreover, the students in the various special subjects are united in so many different groups that the separation of any part of them into one building exclusively has been out of the question. The lectures on geology and natural history, and the work in chemistry, for example, are requisite for all students in the scientific branches as much as for those in agriculture; and so, likewise, many of the lectures in agriculture may be attended by students of other departments.

Temporarily, also, until either public or private munificence provides a separate building or buildings for the library and museum, it has been thought best to place the very valuable collections of the University in the College of Agriculture, the only fire-proof structure on the premises. In view of these considerations, the north or wooden building, originally called the College of Letters, is devoted for the present to rooms used as follows:

IN THE NORTH HALL OR COLLEGE OF LETTERS.

1. Large assembly-room.
2. Philosophical lecture-room, with apparatus, and room and study attached.
3. Two class-rooms in Civil Engineering.
4. Two class-rooms in History and English Literature.
5. General lecture-room.
6. Three mathematical class-rooms.
7. Five class-rooms in Ancient and Modern Languages.
8. Faculty-rooms.
9. Study for the young men while not in recitations.
10. Study for the young ladies while not in recitations.

IN THE SOUTH HALL OR COLLEGE OF AGRICULTURE.

The rooms are assigned as follows:

1. Chemical Laboratories, with their accessory store-rooms, balance-room, study, etc.
2. Lecture-room for scientific lectures by the Professors assigned to this building.
3. Lecture-rooms and work-rooms of the Professor of Agriculture.
4. Temporary library and reading-rooms.

5. Temporary museum-rooms for the collections of the State Geological Survey, and for other collections—Agricultural, Mineral, Metallurgical, etc.

REGENTS.

Ex Officio Regents.—His Excellency Newton Booth, Governor, ex officio President of the Board; His Honor Romualdo Pacheco, Lieutenant Governor; Hon. Thomas B. Shannon, Speaker of the Assembly; Hon. Henry N. Bolander, State Superintendent of Public Instruction; R. S. Carey, Esq., President of the State Agricultural Society; A. S. Hallidie, Esq., President of the Mechanics' Institute of San Francisco.

Appointed Regents.—Hon. Richard P. Hammond, San Francisco; Hon. John W. Dwinelle, LL. D., Oakland; Rev. H. Stebbins, D. D., San Francisco; Hon. Lawrence Archer, San José; J. West Martin, Esq., Oakland; Hon. Samuel B. McKee, Oakland; Hon. Samuel Merritt, M. D., Oakland; Hon. John F. Swift, San Francisco.

Honorary Regents.*—J. Mora Moss, Esq., Temescal; Hon. S. F. Butterworth, San Francisco; Hon. John S. Hager, San Francisco; A. J. Bowie, M. D., San Francisco; William C. Ralston, Esq., San Francisco; Hon. John B. Felton, Oakland; Louis Sachs, Esq., San Francisco; Hon. Henry H. Haight, Alameda.

Executive Officers.—Daniel C. Gilman, President of the University; Messrs. Butterworth, Dwinelle, Haight, Martin, and Stebbins, Advisory Committee; William C. Ralston, Treasurer; Andrew J. Moulder, Secretary; Martin Kellogg, Dean of the Academic Senate; Samuel Jones, Commandant of the Battalion.

Faculty of the Colleges of Letters and Sciences.—Daniel C. Gilman, President.

Professors.†—Ezra S. Carr, M. D., Professor of Agriculture and Agricultural Chemistry; George Davidson, A. M., Professor of Geodesy and Astronomy; Stephen J. Field, LL. D., Professor of Law; Samuel Jones, (U. S. Military Academy), Professor of Military Science, and Adjunct Professor of Mathematics; Martin Kellogg, A. M., (Dean of the Academic Senate), Professor of Latin and Greek; John Le Conte, M. D., Professor of Physics and Industrial Mechanics; Joseph Le Conte, M. D., Professor of Geology and Natural History; Paul Pioda, Professor of Modern Languages; William B. Rising, Ph. D., Professor of Chemistry and Metallurgy; Frank Soule, Jr., (U. S. Military Academy), Professor of Civil Engineering and Astronomy; William Swinton, A. M., Professor of the English Languages, Rhetoric, and History; William T. Welcker, (U. S. Military Academy), Professor of Mathematics; George W. Bunnell, A. M., Assistant Professor of Latin and Greek; Robert E. Ogilby, Instructor in Drawing; Julius Grossmann, Instructor in German; Manuel M. Corella, Instructor in Spanish; James M. Phillips, Instructor in Hebrew.

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*The term "honorary," applied to the Regents, indicates only the mode of their election, which is made by the ex officio and appointed Regents. Every Regent is a full member of the Board.

†The Professors' names are arranged alphabetically.

SUMMARY OF STUDENTS IN ATTENDANCE.

I. *Candidates for a Degree.*

	In Science.	In Letters.	Total.
Senior Class	7	5	12
Junior Class	16	8	24
Sophomore Class	26	11	37
Freshman Class	44	20	64
	93	44	137

II. Students at Large	13
III. Special Course Students	35
Total number of Students	185
Number enrolled at the Mechanics' Institute Lectures	342

The Preparatory Class was discontinued in July, eighteen hundred and seventy-two.

GENERAL STATEMENT.

The University of California closes its fourth year at Commencement, July sixteenth, eighteen hundred and seventy-three.

On the twenty-fourth of September, the two large buildings, provided by the State, will be occupied, and the site at Berkeley will become the seat of the University.

The Political Code of California declares the object of the University to be "general instruction and education in all the departments of science, literature, art, industrial, and professional pursuits, and special instruction for the professions of agriculture, the mechanic arts, mining, military science, civil engineering, law, medicine, and commerce."

The Congressional gift, from which the University has received a portion of its funds, provides (in the language of the Act) for "at least one college, where the leading object shall be, without excluding other scientific and classical studies, and including military tactics, to teach such branches of learning as are related to agriculture and the mechanic arts."

In accordance with these requirements, the modern schools of theoretical and applied science are maintained in the University of California, as well as the traditional classical college. The arrangements for such studies may be expected to improve year by year, as the funds increase and the number of teachers is enlarged.

The full organization of the University will include a College of Letters, a College of Medicine, a College of Law, and a College or Colleges of Science and the Arts, including Agriculture, Mining, and Engineering.

The Colleges of Letters, Science, and Medicine, are already in operation. The medical announcement will be separately made. The following statement refers only to the two first mentioned:

COLLEGES OF LETTERS AND SCIENCE.

The instructions of the University, to be hereafter given at Berkeley, are divided between two Faculties, closely coöperative with one another, and usually meeting as a single body.

1. *The College of Letters.*

This includes the usual classical course, with instruction in Greek, Latin, German, French, Mathematics, and the elements of Natural Science. The Degree to which it leads is that of "Bachelor of Arts."

A modification may be made in this course, substituting for one or both of the ancient languages certain other studies in modern literature and science, and the Degree for this course will be "Bachelor of Philosophy."

2. *The Colleges of Science and the Arts, including Agriculture, Engineering, and Chemistry.*

These provide an introductory course of two years in Mathematics, the elements of Natural Science, and in German, French, and English—and advanced courses of two years each, in which the studies are chiefly special—in Agriculture, Chemistry, or Engineering. Other specialties (among them Mining and Mechanical or Dynamic Engineering), will from time to time be added. A select course of scientific studies may be marked out for the two higher years, designed for such students as have not determined upon specialties.

The Degree in the Colleges of Science and the Arts is "Bachelor of Philosophy."

It should be distinctly understood that the students in the several courses are required to obtain knowledge of other subjects than those which distinctively pertain to their specialty; for example, all the students of language receive some instruction in science, and all the students in science some instruction in language, the object being to provide *a liberal culture, adapted to the various callings of modern society.*

SPECIAL STUDENTS, properly qualified, may pursue the study of particular branches without following in full any prescribed course; but this permission is accorded only to those who have already made a considerable proficiency in knowledge. When such students give all their time to study in the University, they are distinguished by the designation of STUDENTS AT LARGE, and are subject to all the regulations of the University.

TERMS OF ADMISSION.

TO THE COLLEGES OF SCIENCE AND THE ARTS.—Candidates must pass a satisfactory examination in *Higher Arithmetic*, in all its branches, including the extraction of square and cube roots, and the metric system of weights and measures; *Algebra*, to Quadratic Equations; *Geometry*, first four books (Davies' Legendre or Loomis); *English Grammar, Geography, and History of the United States.*

Students are earnestly advised to devote, at least, one year to the study of Latin, before entering this department. It will greatly help

[illegible] of modern languages, and will be useful in their study [illegible] Allen & Greenough's Grammar, and Allen's Latin Reader, are [illegible] recommended as good manuals for this purpose.

[illegible] some one or more of the Modern Languages is also [illegible].

[illegible] OF LETTERS.—Candidates must pass a satisfactory examination in the foregoing, and in the following *additional* studies: [illegible] Latin: Virgil, six books of the Æneid; [illegible]: Greek Grammar; Longan's *Anabasis*, three books.

[illegible] and seventy-four, and thereafter, the Eclogues of [illegible] and two books of Homer's Iliad. Practice [illegible] composition is required as of great importance.

[illegible] entering, whether from other Colleges or [illegible] the preparatory studies, are examined in those [illegible] which they propose to enter.

[illegible] at least sixteen years of age, and bring satisfac- [illegible] ladies as well as young men, are received as [illegible].

COURSES OF STUDY.

The [illegible] pursue in outline the principal branches, and the [illegible] which they are pursued, but some changes must be [illegible] time to time.

COLLEGE OF LETTERS.

FOURTH OR FRESHMAN CLASS.

FIRST TERM.

Latin.—Livy: Latin Composition.
Greek.—Homer's Odyssey.
Mathematics.—Algebra.
English.—History and Structure of the English Language.
Ancient History.—Lectures.
Written Translations.
Lectures on Physiology.

SECOND TERM.

Latin.—Livy; Latin Composition.
Greek.—Odyssey.
Mathematics.—Algebra, completed. Geometry.
English.—History and Structure of the Language.
Vocal Culture.
Ancient History.—Lectures.
Written Translations.
Lectures on Physical Geography.

THIRD TERM.

Latin.—The Odes of Horace.
Greek.—Herodotus; Greek Composition.
Mathematics.—Geometry.
English.—History and Structure of the Language.
Vocal Culture.
Ancient History.—Lectures.
Written Translations.

THIRD, OR SOPHOMORE CLASS.

FIRST TERM.

Latin.—Horace; Ars Poetica and Satires.
Greek.—Herodotus; Greek Composition.
French.—(Begun.)
Mathematics.—Trigonometry, plane and spherical.
Physics.—Heat.
Botany.—(Optional.)
English.
Rhetoric.—Composition.

SECOND TERM.

Latin.—Cicero de Senectute and de Amicitia; Latin Composition.
Greek.—The Prometheus of Æchylus.
French.
Mathematics.—Analytical Geometry.
Physics.—Heat.
Botany.—(Optional.)
English.
Rhetoric.—Composition.

THIRD TERM.

Latin.—Tacitus; Germania and Agricola.
Greek.—The Antigone of Sophocles.
French.
Mathematics.—Surveying and Navigation.
Mechanics.
Zoölogy.
English.
Rheteric.—Composition.

SECOND, OR JUNIOR CLASS.

FIRST TERM.

Latin.—Cicero; in Kellogg's "Ars Oratoria."
German.—(Begun.)
French.
English Literature—Forensic Disputes.

their acquisition of modern languages, and will be useful in their study of science. Allen & Greenough's Grammar, and Allen's Latin Reader, are especially commended as good manuals for this purpose.

Proficiency in some one or more of the Modern Languages is also very desirable.

To THE COLLEGE OF LETTERS.—Candidates must pass a satisfactory examination in the foregoing, and in the following *additional* studies: *Latin Grammar; Cæsar*, four books; *Virgil*, six books of the Æneid; *Cicero*, six orations; *Greek Grammar; Xenophon's Anabasis*, three books.

In eighteen hundred and seventy-four, and thereafter, the Eclogues of Virgil will also be required, and two books of Homer's Iliad. Practice in Latin Composition is regarded as of great importance.

Candidates for advanced standing, whether from other Colleges or not, in addition to the preparatory studies, are examined in those already pursued by the classes which they propose to enter.

Applicants must be at least sixteen years of age, and bring satisfactory testimonials. Young ladies, as well as young men, are received as students. *There is no charge whatever for tuition.*

COURSES OF STUDY.

The following schedule gives in outline the principal branches, and the order in which they are pursued; but some changes must be expected from time to time.

COLLEGE OF LETTERS.

FOURTH, OR FRESHMAN CLASS.

FIRST TERM.

Latin.—Livy; Latin Composition.
Greek.—Homer's Odyssey.
Mathematics.—Algebra.
English.—History and Structure of the English Language.
Ancient History.—Lectures.
Written Translations.
Lectures on Physiology.

SECOND TERM.

Latin.—Livy; Latin Composition.
Greek.—Odyssey.
Mathematics.—Algebra, completed. Geometry.
English.—History and Structure of the Language.
Vocal Culture.
Ancient History.—Lectures.
Written Translations.
Lectures on Physical Geography.

THIRD TERM.

Latin.—The Odes of Horace.
Greek.—Herodotus; Greek Composition.
Mathematics.—Geometry.
English.—History and Structure of the Language.
Vocal Culture.
Ancient History.—Lectures.
Written Translations.

THIRD, OR SOPHOMORE CLASS.

FIRST TERM.

Latin.—Horace; Ars Poetica and Satires.
Greek.—Herodotus; Greek Composition.
French.—(Begun.)
Mathematics.—Trigonometry, plane and spherical.
Physics.—Heat.
Botany.—(Optional.)
English.
Rhetoric.—Composition.

SECOND TERM.

Latin.—Cicero de Senectute and de Amicitia; Latin Composition.
Greek.—The Prometheus of Æchylus.
French.
Mathematics.—Analytical Geometry.
Physics.—Heat.
Botany.—(Optional.)
English.
Rhetoric.—Composition.

THIRD TERM.

Latin.—Tacitus; Germania and Agricola.
Greek.—The Antigone of Sophocles.
French.
Mathematics.—Surveying and Navigation.
Mechanics.
Zoölogy.
English.
Rheteric.—Composition.

SECOND, OR JUNIOR CLASS.

FIRST TERM.

Latin.—Cicero; in Kellogg's "Ars Oratoria."
German.—(Begun.)
French.
English Literature—Forensic Disputes.

Logic.
Mechanics.
Zoölogy.
Astronomy.
Mathematics—Differential Calculus (optional).
Spanish, Italian, or *Hebrew,* optional through the year.

SECOND TERM.

Greek.—Plato's Gorgias.
German.
French.
English Literature.—Disputes.
Logic.
Mechanics.—Liquids and Gases.
Zoölogy.
Chemistry.—Lectures.
Mathematics.—Differential and Integral Calculus (optional)

THIRD TERM.

Latin.—Quintillian; in "Ars Oratoria."
Greek.—Gorgias.
German.
French.
English Literature.—Disputes.
Mental Philosophy.
Physics.—Electricity and Magnetism.
Geology.
Mathematics.—Integral Calculus and Calculus of Variations (optional).

FIRST, OR SENIOR CLASS.

FIRST TERM.

Linguistics.—Whitney's Language and the Study of Language.
Latin.—Juvenal.
Greek.—Demosthenes on the Crown.
German.
English Literature.—Disputes.
Physics.—Acoustics and Optics.
Geology.
Lectures on Ancient Literature.
Lectures on Moral Philosophy.
Spanish, Italian, or *Hebrew,* optional through the year.

SECOND TERM.

Linguistics.—Study of Language.
Latin.—Cicero pro Cluentio.
Greek.—Thucydides.
German.
English Literature.—Essays.
Physics.—Optics.
Geology.

Lectures on Ancient Literature.
Lectures on Modern History.
Lectures on Political Economy.

THIRD TERM.

Linguistics.—Study of Language.
Latin.—The Captives of Plautus.
Greek.—The Clouds of Aristophanes (optional).
German.
Meteorology.
Mineralogy.
Lectures on Law.
Lectures on Hygiene.
Lectures on Greek and Roman Archæology.
Thesis.—Preparatory to graduation.

COLLEGES OF SCIENCE AND THE ARTS.

Fourth, or Freshman Class.

FIRST TERM.

Mathematics.—Algebra.
Chemistry.
French or *German.*—(Begun.)
English.—History and Structure of the English Language.
Ancient History.
Free Hand and Instrumental Drawing.
Lectures on Physiology.

SECOND TERM.

Mathematics.—Algebra, completed. Geometry.
Chemistry.
French or German.
English.—History, Structure, etc.
Written Translations.
Vocal Culture.
Ancient History.
Drawing.
Lectures on Physical Geography.

THIRD TERM.

Mathematics.—Geometry.
Chemistry.—(Recitations and laboratory practice.)
French or German.
English.—Composition.
Vocal Culture.
Ancient History.
Drawing.

THIRD, OR SOPHOMORE CLASS.

FIRST TERM.

Mathematics.—Trigonometry, plane and spherical.
German.
French.
English.—Composition.
Rhetoric.
Physics.—Heat.
Botany.
Chemistry.
Drawing.

SECOND TERM.

Mathematics.—Analytical Geometry.
German.
French.
English.—Composition.
Rhetoric.
Physics.—Heat.
Botany.
Chemistry.
Drawing.

THIRD TERM.

Mathematics.—Descriptive Geometry. (Shades, Shadows, Linear Perspective, Isometric Projection.)
German.
French.
English.—Composition.
Rhetoric.
Mechanics.
Zoölogy.
Chemistry.
Drawing.

SECOND, OR JUNIOR CLASS.

GENERAL STUDIES.

The general studies (pursued by all the members of the class) are the following:

Mechanics and *Physics.*
Zoölogy and *Geology.*
Astronomy.—(One term.)
Chemistry and *Mineralogy.*
German and *French.*
English Literature.—Forensic Disputes.
Mental Philosophy, and *Logic* of Induction.

FIRST, OR SENIOR CLASS.

GENERAL STUDIES.

The general studies of the Class are the following:

Physics.—Acoustics, Optics, Meteorology.
Geology.
German or *French.*
Disputes, Essays, Theses.
Linguistics.—Language, and the Study of Language.

LECTURES.

Short courses of lectures may be expected during the year on the following topics:

Moral Philosophy.
Political Economy.
Law.
Modern History.
Hygiene.

SPECIAL SCIENTIFIC STUDIES OF THE JUNIOR AND SENIOR CLASSES.

As already stated, the students of the Junior and Senior Classes select special courses to which they pay chief attention. Three such courses are now provided, namely: (A) Agriculture; (B) Chemistry; (C) Engineering.

A. Agriculture.

The special studies in the Agricultural Course will include, in the Junior year, the chemical composition of agricultural plants; the plant as an organism adapted to perform a certain work; the material when wrought; the forces by which the work is accomplished; the relation of the plant to the atmosphere (agricultural meteorology) and to the soil; the nature, origin, and composition of the soil.

There will be special instruction in this and the following year on veterinary science, diseases of plants, agricultural entomology, pruning and propagation, viniculture and wine making, dairy economy, farm implements and farm management, fish culture, etc.

The Senior studies will include tillage, irrigation, drainage, reclamation of land, field crops, sheep and cattle husbandry, forestry and arboriculture, sericulture, fruit and other special cultures, household and rural economies, together with a part of the lectures mentioned under the preceding year.

B. Chemistry.

Instruction is given in general and theoretical chemistry by lectures, recitations, and laboratory practice. This course extends through three terms, one in Freshman year and two in Sophomore year, and embraces the elements of inorganic and organic chemistry. Students, after making themselves familiar with the details of experiments, are required to repeat the same in the laboratory for elementary chemistry.

An advanced course of lectures will be given to students of the Junior and Senior Classes in general and theoretical chemistry. This course will embrace a discussion of the general principles of the science and their application to analytical and metallurgical chemistry, and to mineralogy.

The chemical laboratories will be open daily for instruction in analytical chemistry.

The course of instruction in qualitative analysis will include the analysis of simple and complex substances in the wet way, their analysis by the use of the blow-pipe and flame reactions, and the determination of minerals with the blow-pipe. Students will be required to keep a careful record of their work, and to submit the same to the inspection of the Professor. Upon passing a satisfactory examination in qualitative analysis, students may pass to the quantitative laboratory.

In the quantitative laboratory instruction will be given in the quantitative gravimetric analysis of simple and complex salts, minerals, ashes of plants, mineral waters, etc.; in volumetric analysis, including acidimetry, alkolimetry, chlorimetry, etc.; in organic analysis; in gas analysis; in the preparation from inorganic and organic compounds, and in the carrying out of original investigations.

Students taking the course of chemistry will be expected to spend at least fifteen hours a week in the laboratory during Junior year, and twenty hours a week during Senior year.

Students who, for satisfactory reasons, do not wish to take the full course, may enroll themselves with the Professor of Chemistry as special students. Students wishing to take a post-graduate course will find an abundant opportunity for pursuing their studies.

A charge will be made for chemicals, as follows: In elementary chemistry, five dollars per term; in analytical chemistry, twenty-five dollars per term. Students needing assistance, who are able and willing to render service in return for chemicals, may make application to the Professor.

C. Engineering.

The special studies in Civil Engineering for Junior year are as follows:

Second Term—Land surveying and leveling, with supplementary practice in the field; topographical, hydrographical, and geodetic surveying, and map making; with various surveys in the field, practical problems, and map constructions of the adjacent country.

Third Term—Road and railroad surveying and building; the laying out of curves, switches, crossings, etc., and the computations of earthwork; also, a study of the most noted and most perfect roads of the several classes.

The special studies of Senior year are the following:

First Term—Stone cutting, and the application of the principles of descriptive geometry to constructions of masonry drawings, and the solutions of practical problems.

Second Term—Building materials, their strength, and other properties; principles of framing, bridge building, etc.

Third Term—The mechanics of engineering, comparisons, and analyses of existing representative structures.

OPTIONAL STUDIES.

Students already proficient in the studies laid down in the general scheme which they are following, or who have sufficient extra time at their disposal, may pursue, with the permission of the Faculty, optional studies in Spanish, Italian, and Hebrew, or in Drawing; or they may attend lectures and exercises appointed for other sections of the University, if it does not conflict with their regular appointments.

POST-GRADUATE INSTRUCTION.

Students in post-graduate courses will be received in Chemistry, Engineering, and such other specialties as may be provided by the heads of the different departments.

LECTURES.

The following courses of Lectures may be expected during the coming year:

On Constitutional Law, by Hon. S. J. Field.
On Modern European History, by President Gilman.
On the Physical Geography of Europe, by President Gilman.
On Physics and Mechanics, by Professor John Le Conte.
On Natural History and Geology, by Professor Joseph Le Conte.
On Military Science, by Professor Jones.
On Ancient Literature, by Professor Kellogg.
On Ancient History, by Professor Swinton.
On Agricultural Chemistry, by Professor Carr.

Weekly assemblies of the students will also be held, at which occasional lectures and other literary exercises may be expected.

Persons not connected with the University who may desire to attend any of these lectures, may do so by permission of the lecturers.

LECTURES IN SAN FRANCISCO.

During the Winter a special course of lectures is annually given in San Francisco, by the President and Professors of the University, under the auspices of the Mechanics' Institute. The last course, like those of the two previous years, was attended by from three to four hundred persons—as many as could be accommodated in Corinthian Hall—and a full register of their names was kept.

The programme for the course was as follows:

President Gilman.

January 4th—Polytechnic Schools at Home and Abroad.
January 11th—The Physical Geography of the United States in relation to its History.

Professor John LeConte.

January 18th and 25th—The Distances and Activities of the Stars.

Professor Carr.

February 1st—What we Breathe.
February 8th—What we Drink and What we Eat.

Professor Welcker.

February 15th—History of Mathematical Science.

Professor Joseph LeConte.

February 22d and March 1st—The Ancient Glaciers of the Sierras.

Professor Kellogg.

March 8th—Homer, and the True Homeric Poems.

Professor Rising.

March 15th—The Physical and Chemical Properties of Water.

Professor Swinton.

March 22d—Books, and the Use of Books.

A similar course of lectures was also given at the Normal School in San José.

EXPLANATIONS OF SOME OF THE COURSES.

MILITARY SCIENCE.

The course of instruction includes:

I. Tactical Instruction in the field, in the Schools of the Soldier, the Company, the Battalion, and Skirmishers.

II. Lectures on the Art of War.

In addition to tactical instruction in the field, a series of lectures is delivered before the students on the following topics, viz:

1. *Composition and Organization of Armies*—Showing the organization and proportions of different kinds of troops in the armies of the United States, and of the leading powers of Europe at the present day; with a historical sketch of the Greek Phalanx, Roman Legion, and the style of organization in vogue during Feudal times.

2. *The Supply of Armies*—Showing the mode of arming, equipping, clothing, and feeding armies, by the leading nations.

3. *Moving of Armies*—Including transportation by land or water; marches in our own or a friendly country; and marches in the vicinity of the enemy.

4. *Passage of Rivers*—On ice, by fords, by boats, etc.

5. *Military Bridges*—Including an account of bridges improvised from the boats of the country; the construction and use of pontoon bridges; the repair and preservation of bridges; the theory and use of flying bridges; of bridges on casks and inflated skins; the attack and defense of the different kinds of bridges; with historical notices of military bridges in general.

6. *Field Fortification*—Showing the mode of constructing the different kinds of field works, of attacking and defending the same.

7. *Theory of Fire*—Including the phenomena of the combustion of

gunpowder; the theory of the flight of projectiles and principles of gunnery; discussion of the shapes and properties of projectiles and the principles of target practice; calculation of initial velocity, etc.

8. *The Principles of Strategy.*

9. *Historical Sketch* of small arms, from the earliest times down to the present day.

PHYSICS AND MECHANICS.

The course of instruction in PHYSICS and MECHANICS commences with the Second, or Sophomore Year of the regular course, and is completed in three years.

The students in the Sophomore Class are occupied with the subject of HEAT: including Thermometry; Laws of Expansion of Solids, Liquids, and Gases; Laws of Conduction and Convection; Laws of Liquefaction and Solidification; Laws of Ebullition; Laws of Elastic Force of Vapors; Theory of Steam Engine; Laws of Vaporization and Condensation; Spontaneous Evaporation; Hygrometry; Laws of Specific Heat; Sources of Heat; Mechanical Equivalent of Heat; Heat of Combustion; Dynamical Theory of Heat. RADIANT HEAT: embracing laws of Radiation. Reflection, and Absorption; Refraction; Laws of Diathermancy, and the theory of Dew.

Then commences the course on MECHANICS: embracing General Properties of Matter; Measurement and Representation of Forces; Momentum; Uniform Motion; Uniformly Accelerated and Retarded Motion; Laws of Motion; Composition, Resolution, and Equilibrium of Forces; Composition and Resolution of Motions and Rotations; Principle of Moments; Theory of Parallel Forces; Theory of Couples; Curvilenear Motion, and the Laws of Centrifugal Force.

The students in the Junior Class continue the study of MECHANICS: including Laws of Gravity; Laws of Central Forces; Laws of Falling Bodies; Application of Theory of Parallel Forces to Center of Gravity and Stability; Elementary Machines and Theory of Machinery; Laws of Friction and Resistance to Motion; General Theorem of Work; Maximum of Effect of Machines and Animals; Motion on Inclined Planes; Vibratory Motion; Theory of Pendulum and Applications; Laws of Impact; Moment of Inertia; Theory of Projectiles and Application to Gunnery. MECHANICS OF LIQUIDS: Including Transmission of Pressure; Pressure Due to Weight; Buoyancy and Floatation; Application to Specific Gravity. *Motion of Liquids:* Spouting Liquids; Motion of Water in Pipes, Canals, and Rivers; Theory of Resistance of Fluids; Mechanics of Capillarity. MECHANICS OF GASES: Including Laws of Compressibility and Elasticity; Pressure of the Atmosphere; Barometric Formula; Applications to Pumps, Siphons, Fire Engines, etc.

Electricity, Magnetism, Electro-Magnetism, Magneto-Electricity, and Theory of Electric Telegraph, are also embraced in the studies of this class.

Students of the Senior Class are occupied with Undulations and Wave Motion. ACOUSTICS: Including Propagation of Sound, and Elastic Waves; Reflection, Refraction, and Interference of Sounds; Physical Theory of Music. OPTICS: Embracing Theories of Propagation of Light; Velocity of Light; Photometry; Laws of Reflection and Refraction; Dispersion of Light; Spectroscope; Theory of Rainbows and Halos; Interference of Light; Diffraction; Polarization of Light; Theory

of Vision; Theory of Optical Instruments. METEOROLOGY: Including Distribution of Heat on the Earth; Permanency of Climates; Physical Constitution of the Atmosphere; Physical Theory of Winds; Physical Theory of the Oceanic Currents; Physical Theory of Rains and Laws of Distribution; Theory of Tornadoes; Water Spouts, Hurricanes, Typhoons, etc.

The Method of Instruction is by means of Lectures and Recitations, accompanied by experimental demonstrations and the solution of practical problems.

The Cabinet of Physical Apparatus is very complete, and additions are to be made to it each year.

TEXT-BOOK: Snell's edition of "Olmstead's Natural Philosophy." Recommended for reference: Atkinson's edition of Ganot's Physics; Lardner's "Hand-book of Natural Philosophy;" Silliman's "Principles of Physics;" Peck's Mechanics.

GEOLOGY AND NATURAL HISTORY—THIRD CLASS.

The course of lectures in this department will commence in the Sophomore Class, with Botany. In the First Term, Structural Botany is taken up; and in the Second Term the Physiology of Vegetable Growth and Reproduction, and the Principles of the Classification of Plants. The course is fully illustrated by the use of the microscope. TEXT-BOOK: Gray's "Structural and Systematic Botany."

Zoölogy is commenced in the Third Term of this class.

Zoölogy commenced in the previous class will be continued through two Terms of the Junior Class. The course will include the Comparative Anatomy and Physiology of Animals, and the Principles of Classification. The microscope is used to illustrate the course. TEXT-BOOKS: Agassiz's "Principles of Zoölogy." Reference: Carpenter's "Zoölogy," Milne Edwards' "Manual of Zoölogy;" Todd's "Cyclopedia of Anatomy and Physiology," etc.

Geology will be taken up in the Third Term of this class. During this Term, the lectures will be confined to *Dynamical Geology*, or the study of the various agencies now at work modifying the earth's surface and producing structure. Under this general head will be taken up Atmospheric Agencies, River Agencies, Glacial Agencies, Ocean Agencies, Igneous Agencies, Organic Agencies, etc.

Geology, commenced in the previous class, will be continued in the Senior Class. The First Term will be occupied with *Structural Geology*, the *General Structure of the Earth;* the *Structure and Position of Rocks;* the *Formation and Distribution of Fossils;* the *Occurrence and Origin of Mineral Veins;* the *Structure and Mode of Formation of Mountain Chains*, etc. The Second and Third Terms will be devoted to the *History of the Earth.* This history will be illustrated principally from American Geology, and, as far as possible, from the Geology of the State. Throughout the course, special attention will be devoted to points of special interest, scientific or practical. The course is thoroughly illustrated by the use of an ample museum of rocks, ores, and fossils, and an extensive collection of Ward's Geological Casts.

REFERENCES: Dana's "Manual of Geology;" Lyell's "Principles of Geology;" Lyell's "Elements of Geology;" De la Beche's "Geological Observer;" Juke's "Manual of Geology."

MATHEMATICS.

Freshman Class.—Algebra: Solution of Equations, first and second degrees; Binomial Theorem; Extraction of Roots of any degree, both of numbers and algebraic quantities; Operations on radicals of any degree, and upon quantities affected with fractional and negative exponents; Progressions and Proportions; Principle of Indeterminate Coefficients; Summation of Series by the method of Differences, and by special methods; Solution of Exponential Equations; Theory of Logarithms; General Theory of Equations; different methods of Solving Numerical Equations of any degree. TEXT-BOOK: Davies' Bourdon.

Geometry.—Instruction in Plane Geometry; Geometry of Three Dimensions, and Spherical Geometry; Exercises in Geometrical Invention, Loci; Symmetry, Maxima and Minima by Geometrical Methods; Harmonic Proportion and Harmonic Pencils; Polars, Centers of Similitude, etc. TEXT-BOOK: Olney's Geometry.

Sophomore Class.—Trigonometry and Mensuration.—Thorough practical instruction in the use of Tables of Logarithms, and Logarithmic Functions, Plane and Analytical Trigonometry; Spherical Trigonometry, and Mensuration. TEXT-BOOK: Olney's Trigonometry.

Analytical Geometry.—The Second Term is devoted to the study of Determinate and Indeterminate Geometry, including a full Examination of the Properties of the Conic Sections. TEXT-BOOK: Church's Analytical Geometry.

The Third Term to the study of Descriptive Geometry; Spherical Projections; Shades, Shadows, and Linear Perspective. TEXT-BOOK: Church's Descriptive Geometry.

Junior Class.—The First Term is occupied in the study of Differential Calculus; the Second Term in finishing that subject, and with Integral Calculus; the Third Term with Integral Calculus, and the Calculus of Variations. TEXT-BOOK: Church's Calculus.

AGRICULTURE AND AGRICULTURAL CHEMISTRY.

The instruction is given by experimental and illustrated lectures, recitations, essays, and class discussions, and the practical application of principles upon the University grounds. In addition, orchards, vineyards, farms, dairies, and all places of agricultural interest and importance will be visited by the class, as far as practicable, under the guidance and instruction of the Agricultural Professor.

The University domain is being developed, with a view to illustrate every capability of the State for special cultures, whether of forests, fruits, or field crops, and the most economical methods of production. It will be the station where new plants and processes will be tested, and the results made known to the public. It is intended to employ the labor of students, with reasonable compensation therefor, whenever practicable.

Text-books and Works for Reference.

Johnson's How Crops Grow, How Crops Feed; Downing's Works on Horticulture and Landscape Gardening, Darlington's Useful Plants, Gamgee and Law's Anatomy of the Domestic Animals, Gamgee's Domestic Animals in Health and Disease, Gooodale's "Breeding," Randal's "Sheep Husbandry," Harris on Insects, Reports of the Agricul-

tural Bureau at Washington, Transactions of the California State Agricultural Society, Horticultural and Agricultural Journals of California.

LATIN AND GREEK.

The authors read during the course are indicated in the schedule of the College of Letters.

In Latin, the Grammars of Allen and Greenough, and of Harkness, are used, with references to Madvig's. The first named is recommended to beginners. Hadley's Greek Grammar is used. Goodwin's Greek Grammar is recommended to preparatory classes. Liddell and Scott's Greek Lexicon, and Andrews' or White's Latin Lexicon, are also recommended.

All the instruction in Latin and Greek aims to bring out the relations of those languages to our own.

Prominence is given in the classical course to such works, preceptive or illustrative, as bear on the art of public speaking.

Mr. C. W. Howard, of Oakland, has provided for the purchase of maps, photographs, etc., illustrative of ancient Greece and Rome.

MODERN LANGUAGES.

The study of French and German is required of all the candidates for a Bachelor's degree.

In the College of Letters, French is commenced in the Sophomore year, and German in the Junior year.

In the Colleges of Science, French or German is commenced in the Freshman year, and French or German in the Sophomore year, and the study of each language is pursued for three years.

The study of Spanish and Italian is optional.

Text-books.

Grammars:
French—Fasquelle, Otto, Noël & Chapsal.
German—Otto, Woodbury..
Spanish—De Tornos, Gramatica de la Academia.
Italian—Cuore, Foresti.

Books for Translation.

French.	Un Philosophe sous les toits, par E. Souvestre; Littérature Francaise, par Demogeot; Historie de France, par V. Duruy.
German.	Adler's Progressive Reader; Whitney's German Reader; Geschichte der Deutschen Literatur, von Th. Oeser.
Spanish.	Spanish Reader, Vida de Cervantes, por el Dr. Jorge Ticknor; Manuel de Literatura Española, por D. A. Gil de Zárate; Historia de España, por D. Gerónimo de la Escosura.
Italian.	Le mie prigioni di S. Pellico, I Promessi Sposi, di A. Manzoni; Litteratura Italiana, Maffei; Storia d'Italia, Sforzosi.

ENGLISH LANGUAGE.

Systematic study of the English Language, in its history, structure, and vocabulary, is made during the entire first year. The course em-

braces: A Survey of Anglo-Saxon; the Development of the English Language, as recorded in the early monuments of English literature of the eleventh to the fourteenth centuries; the Composition of the English Vocabulary—analysis of its Teutonic and classic elements; English Word Analysis; Radical Terminology; the study of English Synonyms; the Philosophy of English Grammar.

TEXT-BOOK: Latham's "Hand-Book."

WORKS OF REFERENCE: Marsh's Lectures; Whitney's "Linguistics;" Crabbe's "Synonyms;" Dean Alford's "Queen's English;" Trench's "Study of Words."

RHETORIC.

The specific study of the science of Rhetoric is confined to the second year, but the practice of composition extends through the second, third, and fourth years. During these years, fortnightly themes or forensics are required from each student; and these productions are made the subject of special criticism in the class-room

TEXT-BOOK: Whateley's "Elements." In addition, a course of lectures is given on Diction, the Structure of Sentences, the Philosophy of Style, and Literary Art.

ENGLISH LITERATURE.

The study of English Literature extends through the third and fourth years. Original Essays on the several periods of English Literature, and critical estimates of the chief monuments of English Literature, are required from the students.

WORKS OF REFERENCE: Marsh's "Early English Literature;" Chamber's "Cyclopedia;" Craik's "English Literature;" Taine's "Histoire de la Literature Anglaise."

LOGIC.

The study of Logic is taken up at the commencement of the third year, and continues through at least two terms.

Syllabus of the Course: Analytic Outline of Logic; of the Operations of the Mind and of Terms; Propositions; Arguments, and the Theory of Syllogistic Reasoning; Fallacies; Induction; The Discovery of Truth; Inference and Proof; Practice in Dialectics.

TEXT-BOOK: Whateley's Logic.

WORKS OF REFERENCE: Sir W. Hamilton's Lectures on Logic; J. Stuart Mill's Logic.

HISTORY.

The study of Ancient History covers the first year (Fourth Class); the study of Modern History, the fourth year. The instruction is by Lectures.

ENGINEERING.

Instruction in this department is given by means of recitations, lectures, and the use of text books, and works of reference.

By means of a liberal donation of money from Mr. H. D. Bacon, of Oakland, the instruction in this department will be strongly reinforced by the employment of valuable models of bridges, trusses, arches, topography, etc., and numerous diagrams and photographs of the most

important and celebrated engineering structures throughout this country and Europe.

ASTRONOMY.

Instruction in this department begins with the Senior year, and is completed in three terms. In the first, the study of Descriptive Astronomy is completed. In the second, Physical Astronomy. In the third, the theory and use of astronomical instruments are discussed, and the various problems arising in practical astronomy are investigated and solved. Instruction is communicated by means of recitations, lectures, and the use of text books, globes, and charts.

EXAMINATIONS.

In all the courses of the University the instruction, whether by lectures or text books, is accompanied by daily examinations.

Term examinations are held at the close of the first and second terms, on the studies of the term. These examinations are either in writing or oral, according to the nature of the study.

Annual examinations are held at the close of each Academic year. They cover the ground gone over during the year, and the four thus held constitute the examination for a degree. These examinations are chiefly in writing.

The credits for the term and annual examinations are combined with the student's daily credits to make up the record of the term and the year.

Class Competitive Examinations.—In addition to the term and annual examinations, which are obligatory, special examinations for honors, called Class Competitive Examinations, are held at the close of each year, which are entirely optional. Honors are awarded on the basis of these examinations.

Notice of intention to compete must be given ninety days before Commencement. Parts for the Commencement exercises will be assigned only to those who enter the Class Competitive Examination of the last year.

Examinations for Degrees.—For students passing through the University these examinations are annual, as stated above, and there is no other examination covering the whole course. But the organic Act establishing the University provides such a general examination for those who have studied elsewhere.

"Students who shall have passed not less than a full year as resident students in any college, academy, or school in this State, and, after examination by the respective Faculty of such college, academy, or school, are recommended by such Faculty as proficient candidates for any degree in any regular course of the University, shall be entitled to be examined therefor at the annual examination; and on passing such examination shall receive such degree for that course, and the diploma of the University therefor, and shall rank and be considered in all respects as graduates of the University.

"All students of the University who have been resident students thereof for not less than one year, and all graduates of the University in any course, may present themselves for examination in any other

course or courses at the annual examinations, and, on passing such examination, shall receive the degree and diploma of that course."

Graduation Thesis.—The careful preparation of a thesis, as part of the final examination, is exacted from every candidate for the Bachelor's Degree. These theses are not prepared for public exhibition, but are intended to give to the student practice in careful research by concentrating his attention on some special investigation pertinent to his principal course of study, or to his chosen pursuits. Each thesis is examined carefully by the Professor in whose department it falls, and is then submitted to the entire Faculty for their approbation.

HONORS AND PRIZES.

Honorable mention will be made of those who pass the best examination on their admission to the Freshman Class.

The students making the best record for the Term will receive honorable mention in the public assembly. Those who make the best record for the year will hereafter be designated in the Annual Register.

Special honors will also be awarded to the most successful in the Class Competative Examinations—not more than five in each of the four classes. The highest competitor of the Senior Class will receive the University Medal, or an equivalent sum of money.

Commencement honors will also be assigned at the discretion of the Faculty.

In addition to the scholarships provided for, and the medal or its equivalent, a small sum of money has been pledged for prizes in some of the departments of scholarship.

A special prize of fifty dollars will be given next year, by the President, to the student who shall write and deliver the best English oration, under such regulations as the Faculty may prescribe. A special prize of fifty dollars will be given by the Professor of Chemistry to the student who shows the most proficiency in that science.

The friends of the University are earnestly requested to establish prizes and scholarships, to stimulate the departments in which they take the deepest interest.

DEGREES.

The degree for the traditional classical course is A. B., Bachelor of Arts. For all the scientific courses, as also for the select literary course, the degree is Ph. B., Bachelor of Philosophy. The higher degrees of A. M., C. E., and Ph. D., will be given on the completion of an adequate post-graduate course.

DISCIPLINE.

The rules of the University are few; the exactions are strict. Good behavior, under all circumstances, regularity and punctual attendance at all appointed exercises, diligence in study, and the maintenance of thorough scholarship, are expected from all the students. Failures or negligence in any of these respects will render the student liable to private and public admonitions, to dismissal, and in case of heinous misdemeanors, to expulsion. Formal reports are not regularly transmitted to the parents, but the Professors will be ready to give information respect-

ing the standing of a student, to his parent or guardian, whenever it is requested.

BUILDINGS.

The new buildings, at Berkeley, which will be occupied at the beginning of the coming year, are large, well arranged, and well furnished. They are designed for class-rooms and lecture-rooms. Temporary accommodations are provided in them for the library and collections.

In the South Hall, or College of Science, will be found the rooms devoted to Agriculture, Metallurgy, Chemistry, Natural History, and Geology. The library and scientific collections are also here placed.

In the North Hall, or College of Letters, will be found the offices of the President, Dean, Faculty, and Regents, together with the class-rooms in Ancient and Modern Languages, Mathematics, History, etc.

An assembly-room, holding four hundred persons, is here provided. The lecture-room, and apparatus for instruction in Physics are also here placed.

The new Laboratories in the College of Science are large, convenient, and supplied with the best and newest facilities for chemical instruction. One room is specially fitted up for carrying out the experiments of the elementary chemistry of the Freshman and Sophomore Classes.

In the qualitative and quantitative laboratories each student will be assigned a desk and supplied with reagents and apparatus necessary for making analyses.

LIBRARY.

The Library of the University numbers over eleven thousand volumes. It includes the books received from the College of California, purchases made by the University to the amount of five thousand dollars, a generous gift of encyclopedias and other standard works from E. L. Goold, Esq., of San Francisco, and the collection of books which belonged to the late Dr. Francis Lieber, of New York—a collection purchased and given to the University by M. Reese, Esq., of San Francisco, besides other generous gifts.

There is a manuscript catalogue of the Library constantly accessible, and the books are open to all the officers and students daily.

COLLECTIONS.

In Geology, etc.—The University has received within the past year a valuable collection of ores, fossils, minerals, and metallurgical products bought of the collector, Mr. C. D. Voy, and presented to the University by D. O. Mills, Esq., of San Francisco. It will presently receive the collections of the California Geological Survey. It has a good, full series of the Ward Geological Casts.

In Botany.—The nucleus of an herbarium has been provided by the generosity of H. Edwards, Esq., of San Francisco, who has given his collection of Australian plants, one thousand specimens in number.

In Chemistry.—The commencement of a chemical cabinet has been made, and additions will be made to it during the coming year.

BOARD AND LODGING.

The University has hitherto made no provision for the board and lodging of the students, but it is supposed that around the site at Berkeley, ample accommodations will be provided, on reasonable terms, for all who are away from their homes. Probably the facilities of transit will be such that those who desire to lodge in their homes at San Francisco and Oakland, will be able to do so.

It is difficult to state the necessary expenses of living. A few students, in a club, have lived at a cost of seventeen or eighteen dollars each per month, for board and lodging. The average expenses for board and lodging of twenty-eight persons, who reported to the Faculty in the Summer of eighteen hundred and seventy-three, were twenty-six dollars per month, which is probably an adequate but not a generous allowance.

CALENDAR FOR 1873.

January 2—Beginning of Second Term.
April 2—End of Second Term.
(Spring vacation of two weeks.)
April 17—Beginning of Third Term.
July 15—Examinations for Admission.
July 16—COMMENCEMENT—End of the year.
(Summer vacation of ten weeks.)
September 24, 25—Examinations for Admission.
September 25—Beginning of the First Term.
December 24—End of the First Term.

CALIFORNIA STATE NORMAL SCHOOL.

OFFICE OF THE BOARD OF TRUSTEES OF THE STATE NORMAL SCHOOL,
SAN JOSÉ, June 30th, 1873.

To His Excellency,
NEWTON BOOTH,
Governor of California:

SIR: In accordance with the provision of subdivision eleventh of section fourteen hundred and eighty-nine of the Political Code, we have the honor to submit to your Excellency the annual report of the Board of Trustees for the school year commencing July first, eighteen hundred and seventy-two, and ending June thirtieth, eighteen hundred and seventy-three.

Very respectfully, your obedient servant,

HENRY N. BOLANDER,
Secretary.

JAMES DENMAN,
C. T. RYLAND,
B. BRYANT,
B. CORY,
T. ELLARD BEANS,
Board of Trustees of the California State Normal School.

REPORT.

Contrary to expectation, the Board of State Normal School Building Commissioners were unable to prepare the State Normal School building for occupancy by June eighteenth, eighteen hundred and seventy-two, the beginning of the eleventh school year, and the first term had to be commenced in the Reed Street School House, the quarters occupied by the school since its removal from San Francisco. By the seventh of July, however, the Board of Building Commissioners had prepared the rooms

sufficient for immediate wants, and the school found at last a *home*, and ceased to be a beneficiary of City Boards of Education.

The Normal School Building is not yet completed, and though its completion has been intrusted to a Board unconnected with the Board of Trustees, yet, as our coöperation was requested by that Board, we are warranted in urging the speedy completion of the building. At a meeting of the Board of Trustees held October twenty-fourth, eighteen hundred and seventy-two, the Board of State Normal School Building Commissioners presented the following statement:

SAN JOSE, October 24th, 1872.

To the Honorable Board of Trustees of the State Normal School:

GENTLEMEN: Your attention is respectfully invited to the consideration of the desirableness of completing the Normal School building.

The appropriation made by the Legislature was seventy-five thousand dollars for each of the fiscal years eighteen hundred and seventy-two and eighteen hundred and seventy-three. The Commissioners of the State Normal School Building audited and allowed claims outstanding against the State on account of said building, to the amount of eighty-eight thousand five hundred and thirty-eight dollars, an amount exceeding by several thousands the appropriation for the first year. The payment of warrants for the work done and the material furnished under the supervision of the Commissioners could not be made until the second fiscal year's appropriation could be realized; and, in order to enable the Commissioners to go on with the work, the Controller was authorized to issue *interest*-bearing warrants. This he refused to do, as the bill made no provision for the payment of the interest. This interest was therefore added as percentage to the orders, and of course had to be included in the amount of the appropriation. The Commissioners have gone as far as they feel it prudent to go with the work, as they are limited by the appropriation in drawing orders on the Controller; but there are many reasons why the building should be completed as soon as practicable.

It is possible that workmen will go on and take certificates of time, waiting for a new appropriation to meet their claims, or capitalists may be found who will purchase these certificates and wait for an appropriation or relief bill.

If we had for building purposes the amount paid as percentage, we feel confident that we could so far complete the building as to effectually protect it on the outside and fit every part of it for use.

If the Board of Trustees will give an expression as to the desirableness of our going on with its work, under the circumstances as above set forth, they will very much oblige the Commissioners.

Very respectfully,

T. H. SINEX,
I. A. QUIMBY.

The Board of Trustees, after due deliberation, adopted the following resolutions:

WHEREAS, The Act of the Legislature providing a fund for the completion of the State Normal School building authorized the issuance of

interest-bearing warrants, but failed to provide for the payment of said interest; and whereas, the Commissioners of said building have included said interest in their orders on the Controller to be met out of the appropriation; and whereas, by careful approximate estimates, this interest, amounting to about eight thousand five hundred dollars, would go far towards finishing the building, if not entirely completing it; and whereas, in our opinion, it is a matter of economy to the State, in saving material and labor, to continue the work to the completion of the building; therefore, be it

Resolved, That should the Commissioners of the State Normal School Building continue the work on said building to the extent of using eight thousand five hundred dollars, we will unite with them in urging the next Legislature to provide promptly for the payment of said sum.

At the commencement of the first term, the corps of teachers remained the same in number and persons as for the preceding school year, viz: Dr. W. T. Lucky, Principal; H. P. Carlton, Vice Principal; Miss E. W. Houghton, Assistant Senior Class; and Mrs. Dorcas Clark, Assistant Junior Class. But already during the last school term the need of an additional teacher had made itself grievously felt, and the Board had appointed a committee to select a qualified teacher. After considerable correspondence and consequent delay, Charles H. Allen, a well-known Institute lecturer, and for years connected with Normal Schools, was, on recommendation of the committee, elected as a teacher of the Natural Sciences, Music, and Drawing. Prof. Allen entered upon his duties October seventh, eighteen hundred and seventy-two.

Ever since its removal from San Francisco, no training school had been connected with the Normal School. As soon as the school was permanently located, steps were taken to organize this indispensable adjunct, or rather auxiliary, to every well organized Normal School. Miss M. J. Titus, a teacher in the Owesgo Normal School, was elected Principal of the Training School. At the beginning of the second term she entered upon her duties. The pupils admitted to the Training School were mostly taken from the public schools of San José, and their number limited to forty.

The wants of the school require that at least two additional classes be established in the Training School, to enable all members of the Senior Class of the Normal School to work in the Training School. In order to make the pupils familiar with all grades that are to be found in the public schools, two other classes should be opened. These will serve the additional purpose of providing a proper place for the instruction of those pupils who are constantly coming to the Normal School, many of them from a distance, and who are not far enough advanced to be admitted into the regular classes.

For the present year the corps of teachers has been increased by two; next year it must be again increased by at least two.

The number and names of pupils in attendance during the year; the number and names of graduates of the school since its organization in eighteen hundred and sixty-two; the course of study; extracts from the rules adopted by the Trustees for the government of the school; the calendar for eighteen hundred and seventy-three and eighteen hundred and seventy-four, and the rules and regulations of the Board of Trustees, will be found in the catalogue hereto appended.

FINANCES.

The appropriation of twelve thousand dollars for the tenth school year (twenty-third fiscal year) was exhausted several months before the close of the year, and an indebtedness of two thousand seven hundred and twenty dollars and eighteen cents remained to be paid out of the appropriation for the next school year (twenty-fourth fiscal year). Of this indebtedness one thousand and eighty-three dollars and three cents was due for teachers' salaries, and one thousand six hundred and thirty-seven dollars and fifteen cents, for sundries. Of the latter sum, one thousand four hundred and thirty-four dollars were due for furniture purchased in the beginning of the year, and which should have been paid out of the Building Fund; but as the fund was exhausted before the presentation of the bill, its payment was left to the Building Commissioners, but on their refusal to pay it, the Board of Trustees saw itself compelled to pay it out of the appropriation for the support of the Normal School.

For the eleventh school year (twenty-fourth fiscal year), fifteen thousand dollars were appropriated and expended as follows:

FINANCIAL REPORT,

Eleventh School Year (Twenty-fourth Fiscal Year).

EXPENDITURES.

Salaries due for the tenth school year.	$1,083 03
Sundries due for the tenth school year	1,637 15
Salary of Dr. W. T. Lucky, eleventh school year	3,021 60
Salary of H. P. Carlton, eleventh school year	1,700 00
Salary of Chas. H. Allen, eleventh school year	1,800 00
Salary of Miss E. W. Houghton, eleventh school year	1,506 00
Salary of Mrs. Dorcas Clark, eleventh school year	1,125 00
Salary of Miss M. J. Titus, eleventh school year	739 00
Salary of Mrs. Mary Muller, Janitress, eleventh school year.	589 00
Stationery	258 40
Printing	278 00
Furniture and supplies	767 52
Incidentals	495 30
	$15,000 00

For the eleventh school year there is a deficit of seven hundred and forty-six dollars and forty cents for salaries, and nine hundred and ten dollars and seven cents for sundries; total, one thousand six hundred and fifty-seven dollars and seventeen cents. The probable expenditures for the next school year will be as follows:

Estimated expenditures for twelfth school year (twenty-fifth fiscal year).

Deficit for eleventh school year	$1,657 17
Salary of Principal	3,250 00
Salary of Vice Principal	2,400 00
Salary of Preceptress	1,800 00
Salary of Assistant, Junior Class	1,500 00
Salary of Principal of training school	1,200 00
Salary of additional teachers, at least	1,800 00
Salary of Janitress	1,020 00
Furniture for additional classes in training school, etc	2,000 00
Supplies, such as fuel, etc	500 00
Stationery	300 00
Incidentals, including traveling expenses of Board of Trustees	1,000 00
	$18,427 17

This estimate of the expenditures for the twelfth school year is more than within the bounds of the actual expenditures required. As the appropriation is only fifteen thousand dollars, there will be at the end of the next school year a deficit of from three to four thousand dollars. The deficit for the thirteenth school year will be still larger, and to cover all accruing and to avoid future deficits, twenty thousand dollars per annum should be appropriated for the support of the Normal School.

At a joint meeting of this Board and the Board of Building Commissioners, exhibits were presented showing that an appropriation of twenty-five thousand dollars is needed to finish the Normal School building, and to liquidate the indebtedness outstanding against the Building Fund. Five thousand dollars will be required to fully furnish the building after its completion. Ten thousand dollars will be required for grading, draining, and ornamenting the Normal School grounds.

In conclusion, we beg permission to call your Excellency's attention to the appropriation of three thousand dollars, allowed by the last Legislature, for the purchasing of apparatus for the Normal School. Through some oversight the appropriation, though passed by both houses, was not enrolled, and failed to become a law. Still, the pressing need of apparatus has induced the Trustees to purchase some, in the hope that the present Legislature will ratify the action of the last Legislature.

Appended will be found the report of the Principal of the School, and the catalogue of the school for eighteen hundred and seventy-two and eighteen hundred and seventy-three.

HENRY N. BOLANDER,
Secretary.

ATTENDANCE.

Senior class	45
Junior class	115
Regular normal pupils	160
Number of teachers in the senior class	31
Number of teachers in the junior class	58
Total	89

Average time taught—two years. Thirty-six counties of California were represented, and fourteen were unrepresented.

GRADUATES.

First Class.....*May*, 1863.

Comstock, Bertha	Fink, Augusta P.
Hart, Nellie	Mails, Louisa.

Total, 4.

Second Class.....*May*, 1864.

Ashbrook, M. V.	Jewett, Lizzie B.
Baldwin, Ellen S.	Krauth, Augusta M.
Beverly, Victoria	Kimball, Adrianna L.
Carey, Susie D. L.	Norton, Mary J.
Cummings, Clara A.	Smith, Jennie
Clayton, Julia	Scott, Minnie
Day, Jennie O.	Solomon, Eva
Grant, Ellen G.	Wade, Margaret
Goldsmith, Mary	Williams, Mary E.
Jewett, Annie S.	

Total, 19.

Third Class.....*December*, 1864.

Allyne, Lucinda	Girvin, Minnie
Broadbent, Elijah	Kennedy, Annie E.
Bradshaw, William R.	McBride, Henry E.
Davis, Sadie	Sawyer, Philena.
Field, Carrie P.	

Total, 9.

Fourth Class.....*June*, 1865.

Campbell, Cornelia E.	Jordon, Maggie L.
Cameron, Augusta S.	Jourdan, Annie M.
Gibbons, Anna	Littlefield, Nellie A.

Morgan, Florence A.
Menges, Caroline A.
Mills, Sophronia
Nichols, F. A. E.
Pershin, George S.
Perkins, Mary
Soule, Fanny
Youngberg, Mary

Total, 14.

Fifth Class.....*December*, 1865.

Doud, Nettie
Estabrook, Mary H.
Frissell, Sarah A.
Greer, Jennie E.
Hall, Mary E.
Kennedy, Joseph F.
Loutit, Alexander J.
Megerle, Louis J.
O'Connor, Maria
Pascoe, Mary
Williams, Sabrina A.

Total, 11.

Sixth Class.....*June*, 1866.

Carswell, Abbie
Campbell, Amy E.
Flint, Almira T.
Garrison, Gazena A.
Gummer, Lillie E.
Humphrey, Erwin D.
Holmes, Annie M.
Morgan, Mary J.
Morgan, Lizzie A.
Miller, Sarah E.
Metcalf, Mary F.
Moulthrop, Mary S.
Olinger, Abner F.
Piper, Frances B.
Rogers, Arthur
Simon, Frances
Soule, Maria L.
*Stephenson, Charlotte F.
Trowbridge, Nelson S.
White, Elizabeth
White, Silas A.
York, Elizabeth

Total, 22.

*Deceased.

Seventh Class.....*June*, 1867.

Ashley, Julia V.
Anderson, Sarah E.
Bevans, Maggie E.
Bigsby, Emma
Beers, Adrianna L.
Chase, Carrie M.
Childs, Charles W.
Chapman, Mattie E.
Clayton, Kate J.
Clark, Mary P.
Estabrook, Hattie J.
Featherly, Henrietta
Gaddis, Annie D.
Germain, Clara
Gray, Annie L.
Hart, Mary T.
Heydenfeldt, Mary G.
Harvey, Ella M.
Kennedy, James G.
Lewis, Cloelia M.
Locke, Hattie B.
Newell, Lizzie A.
Owens, Nellie M.
O'Brien, Kate
Powell, Howell
Roberts, Ella A.
Smith, Flora C.
Smith, Grace
Shipley, John C.
Wright, Ada E.
Wooll, Hattie L.

Total, 31.

Eighth Class.....*November*, 1867.

Cocks, Roxa A.
Eames, R.
Howard, Maggie
Hunt, B. E.
Lawless, Martha
*McNaughton, C. D.
Perkins, Mary
Savage, Mary E.
Sears, Marion
Slater, Henrietta

Total, 10.

*Deceased.

Ninth Class.....*May*, 1868.

Ashbrook, Truman P.
Batchelder, Ella E.
Betancue, Lizzie C.
Bonnell, Lucy
Brown, Julia B.
Cathcart, Annie
Cope, Lizzie
Crittenden, Lillian
Day, Frances A.
Field, Sarah
Hall, Anna
Hall, Sallie L.
Hammond, Josiah S.
Heney, Julia
Jacks, Fannie
Joice, Amelia
Jones, Edward W.
La Grange, Anna
Lawrey, Beatrice M.
Lawton, Susie S.
Lewis, Annie H.
Little, Mary
Magoon, William N.
Mason, Amelia L.
McCollam, Lizzie
McKean, Lottie
*McPherson, Hellen
Paine, Sumner T.
Palmer, Anna
Powell, David
Shelley, Troy
Smith, John A.
Smith, Mary
Staples, Elizabeth
Stokum, Marion
Stone, Mary E.
Treadway, Addie
Ward, Mary

Total, 38.

*Deceased.

Tenth Class.....1869.

Bell, Mary
Bryant, Annie
Buckman, Samuel F.
Campbell, Ruth G.
Curragh, John M.
Gould, Marietta J.
Grogan, Annie E.
Hayburn, Annie
Jones, Absalom T.
Lacey, Louisa
Lindberg, Emily U.
*Mackie, Clara A.
Mann, Jennie S.
McColgan, Kate F.
Millett, Clara B.
Northcutt, Cara A.
Parker, Olive G.
Pepper, Adella
Pratt, Mary E.
Robinet, Nellie
Smith, Maggie E.
Solomon, Esther
Stegman, Mattie H.
Stowe, Augusta M.
Thomas, Mary A.
Watson, Maggie H.
Weed, Alice
Whitmore, Ella L.
Wright, Mary A.

Total, 29.

*Deceased.

Eleventh Class.....1870.

Adams, Clara
Allison, Arminta E.
Bicknell, Bertha A.
Boyle, Sarah J.
Burrill, Mary A.
Casey, Johanna T.
Carruthers, Leonora
Carothers, Isabella
Clark, James E.
Colby, Mary A.
Eastman, Augusta R.
Garland, Abbie A.
Gibson, Annie A.
Green, Katie
Greer, Mary L.
Graffelman, Loleta
Haas, Annie
Hardeman, Deborah W.
Henderson, Mary J.
Howe, Alvin J.
Marvin, Adella
Mathews, Mary
McKean, Annie M.
Montgomery, Alberta S.
Murphy, Isabella M.
O'Leary, Katie R.
Royce, Ruth
Randall, Rosa
Stackpole, George A.
Savage, Nellie A.
Shuey, Sarah J.
Snow, Alice R.
Sprott, Maggie
Stone, Helen M.
Stincen, Emma E.
Stockton, Annie M.
Sherman, Fannie A.
Tillottson, Henry J.
*Tillottson, Emma
Turner, Cynthia
Wemple, Emmett L.
Wilson, Jessie E.
Withrow, Marie
Wetmore, Edith L.
Yates, Jennie

Total, 45.

*Deceased.

Twelfth Class.....1871.

Bell, Nicholes Jane
Benjamin, Julia I.
Carrau, Celina Rose
Conmy, Ellen Alice
Clark, Hattie G.
Cottle, Mary Annetta
Doyle, Mary Irene
Fletcher, Annie Amelia
Greer, Emily F.
Hardy, George Henry
King, Mary Ella
Moore, Matilda M. E.
Maguire, Louisa
Pelton, Malvina Chase
Plank, Susanna Rebecca
Russell, Ella Louisa
Ruddock, John
Sherman, Ella Imogene
Sharp, James Meikle
Sickal, Marcus Theo.
Tyus, Mary Alabama

Total, 21.

Thirteenth Class.....1872.

Ashurst, Nellie
Beal, Charles R.
Dixon, Bessie
Frisby, Phebe A.
Fisk, Julia A.
Hixon, George C.
Hilton, Emily H.
Kennedy, Thomas H.
Markham, Chas H.
Phelps, Augusta M.
Peckham, Martha J.
Rixon, Chattie K.
Stephens, Virginia P.
Terry, Eulalia A.
Wagenseller, Etta
Wallace, Alma
Wignall, Fannie

Total, 17.

Fourteenth Class.....1873.

Bruch, Louis	Merritt, Mary
Cahill, Josephine	Merritt, Isabel
Carroll, Anna	Murdock, Ella H.
Chipman, Lemuel J.	Martin, Julia
Foss, William F. F.	Roberts, Lizzie
Goodcell, Henry, Jr.	Snow, Delia R.
Harris, Dora B.	Starr, Nellie
Hendrix, Mary	Taylor, Olivia L.
Kratzer, Lella	Tilton, Etta M.
Kelsoe, Luella	Withington, Augusta S.

Total, 20.

Whole number of graduates.....291.

COURSE OF STUDY.

JUNIOR CLASS.

First Term—June 18th to October 24th.

Orthography, Reading, Penmanship, Drawing, Geography, Arithmetic, Grammar, and Word Analysis.

Second Term—November 5th to March 27th.

Algebra, United States History, Physiology, Grammar, and Composition.

SENIOR CLASS.

First Term—June 18th to October 24th.

Vocal Culture, Geometry, Natural Philosophy, Natural History, Chemistry, and Rhetoric.

Second Term—November 5th to March 27th.

Arithmetic, Physical Geography, Botany, Mental Philosophy, and English Literature.

General exercises during the entire course.

Vocal Music, Methods of Teaching, Composition, Declamation, School Law, and Constitution of the United States and of California.

EXTRACTS

From the Rules adopted by the Trustees for the government of the State Normal School.

DISCIPLINE.

"It shall be the duty of the teachers to maintain good discipline. Pupils will be expected to do, without compulsion, what is required, and to refrain from all improprieties of conduct. Those who are unwilling to conform cheerfully to the expressed wishes of their teachers will be presumed to be unfit to become teachers. Irregularity of attendance (without reasonable excuse), inattention to the rules and regulations of the school, or continued imperfection in recitations, will constitute sufficient cause for suspension by the Board of Instruction."

EXAMINATIONS.

"There shall be weekly, semi-annual, and annual examinations of all the pupils, written or oral, or written and oral, at the discretion of the Board of Instruction.

"At the semi-annual examination those members of the senior class whose scholarship, habits, and general characteristics do not give assurance that they will be able to obtain first grade certificates, at the end of the year, may receive, on examination upon questions prepared by the State Board of Examination, second or third grade certificates, entitling them to teach until the beginning of the next senior class, when they will be readmitted without further examination or recommendation.

"At the annual examination those juniors whose scholarship, habits, mental development, and general characteristics, give assurance that they can sustain themselves in the studies of the senior year, may be promoted; or, if deficient in scholarship only, they may be permitted to pass an additional examination at the beginning of the next year."

DIPLOMAS.

"The Normal School Trustees will grant diplomas to those who complete the entire course, and pass a satisfactory examination upon the same."

CONDITIONS OF ADMISSION.

Ladies must be sixteen years of age, and gentlemen seventeen, to enter the Junior Class. To enter the Senior Class they must be one year older. All applicants must present valid teachers' certificates. This will entitle them to enter the Junior Class without examination, provided they enter during the first month of the year. All who apply for admission into the Senior Class must pass a written examination upon all the studies of the Junior Class.

As the accommodations are ample, no limit is fixed to the number of representatives to which a county is entitled.

TO APPLICANTS.

Examine carefully the course of study, in order to decide what is the best time for you to enter. Many are disappointed on account of neglecting to do this. If you are in doubt, write to the Principal for information. Do not come to the school unless you know the advancement of the classes, and are satisfied of your ability to enter one of them.

Study the regulations for granting Normal School diplomas. Observe that mere scholarship is not sufficient to secure them. "Habits, mental development, and general characteristics" are even more important than scholastic attainments.

EXPENSES.

Tuition is free. Text books and books for reference will be supplied by the school.

Good boarding can be obtained at from five dollars to seven dollars per week. Rooms for self-boarding can be obtained at reasonable rates.

APPARATUS.

The Legislature has just appropriated three thousand dollars for the purchase of additional apparatus, and one thousand dollars for the purchase of reference books, maps, diagrams, etc.

CABINET AND MUSEUM.

Rooms have recently been fitted up to receive a cabinet of geological specimens and natural history. A fine collection of the minerals of the Eastern Coast has already been put up, as also a full set of specimens of the lead and zinc formations from the Mississippi Valley.

It is exceedingly desirable that a full collection be made of the minerals of the Pacific slope. We are so rich in mineral deposits that but little effort will be needed to furnish a fine representation in the Normal School. Donations for this purpose are solicited, from those who have been members of the school and others, and will be thankfully received and gratefully acknowledged.

TRAINING SCHOOL.

This important auxiliary of every thoroughly organized Normal School was reopened in November. The number of pupils was limited to forty. Almost double this number have applied for admission. A new class of forty will be formed in June, and another in November. These three classes will afford to the Normal pupils ample facilities for observing and for *practicing* the principles taught them in lectures on "Methods of Teaching."

APPLICATIONS FOR TEACHERS.

Many County Superintendents, Principals of Academies, and Trustees of District Schools, apply to us for teachers. Many teachers, not con-

nected with the Normal School, apply to us for situations. To accommodate all parties, we have established a "Teachers' Exchange." All applications will receive prompt attention. With your applications, send all necessary particulars. As no fee is charged, applicants must not subject us to unnecessary expense or trouble. We must not be held responsible for the teachings of those with whom we have no personal acquaintance.

NUMBER OF GRADUATES.

Two hundred and ninety-one ladies and gentlemen have graduated from the full course of the Normal School, and have taught successfully, occupying prominent positions on this coast. As an evidence of their success in their calling, the yearly demand for the Normal trained teachers is much greater than the supply. A hundred graduates of the Normal School, instead of twenty to forty, could annually find responsible and lucrative positions. Many who do not graduate attend a sufficient time to catch the Normal spirit and enthusiasm, and go hence much better prepared for their work.

CALENDAR FOR 1873–4.

1873. Wednesday, June 18th.....First term begins.
1873. Friday, October 24th.....First term ends.
(Fall vacation, one week.)
1873. Wednesday, November 25th.....Second term begins.
1874. Thursday, March 26.....Second term ends.

RULES AND REGULATIONS OF THE BOARD OF CALIFORNIA STATE NORMAL SCHOOL TRUSTEES.

ELECTION OF EXECUTIVE COMMITTEE.

The Board of Normal Trustees shall, at the annual meeting each year, elect, by ballot, three members to act as the Executive Committee of the Board.

REGULAR MEETINGS.

The Board shall hold its regular annual meeting during the last week of the last term of the school year, and the semi-annual meeting during the last week of the first term.

SPECIAL MEETINGS.

The Secretary shall call a special meeting at the written request of three members; but no meetings shall be called on shorter notice than five days; and no business shall be transacted at such meetings except that which is specified in the call.

QUORUM.

Four members shall constitute a quorum for the transaction of business.

ORDER OF BUSINESS.

The President shall take the chair at the hour appointed for the meeting of the Board; shall call the members to order; and, if a quorum be present, shall cause the minutes of the last meeting to be read. If a quorum be not present within thirty minutes past the regular hour for meeting, the Board shall stand adjourned. The order of business shall be as follows:

1. Reading of the minutes.
2. Communications and petitions.
3. Reports of Executive Committee.
4. Reports of Superintendent.
5. Reports of special committees.
6. Unfinished business.
7. New business.

YEAS AND NAYS.

The President shall, at the request of one member, take the sense of the Board by yeas and nays.

APPOINTMENT OF COMMITTEES.

All special committees shall be appointed by the President, unless otherwise ordered by the Board.

FOUR VOTES REQUIRED.

No measure or proposition shall be valid unless passed by four votes, except motions to adjourn, to postpone to a definite time, to reconsider, to commit, to lay on the table, the previous question, to amend, or to substitute.

EXCUSE FROM VOTING.

Every member shall give his vote, when a question is put, unless the Board for special reasons excuse him, which question shall be decided without debate. A motion to excuse can only be made before the Board divides, or before the call of the yeas and nays is commenced.

WRITTEN RESOLUTIONS.

All resolutions shall be submitted in writing, with the name of the writer; and any motion shall be submitted in writing if the President direct or any member request it.

RECORD OF COMMITTEE OF THE WHOLE.

Propositions made in Committee of the Whole, unless carried, shall not be entered on the journal.

YEAS AND NAYS.

All motions, resolutions, orders, and votes of the Board, requiring the disbursements of money, shall be taken by yeas and nays, and the vote registered.

All elections shall be by ballot when called for by any one member.

CUSHING'S MANUAL.

The Board shall be governed in its deliberations by the rules of Cushing's Manual, except as provided in these rules and regulations.

AMENDMENT OR REPEAL OF RULES.

The rules or regulations may be amended or repealed at any regular meeting of the Board, by an affirmative vote of four members, notice of the proposed amendment having been given in writing at a previous regular meeting.

The Institution for the Deaf and Dumb and the Blind.

This Institution, by its organization and purpose, is a part of the public school system of the State, and, as an educational establishment, properly receives mention in a report from the Department of Public Instruction.

The school is situated in a location favorable to health and to intellectual pursuits. The buildings are massive and commodious, while the corps of instructors, and the apparatus and equipment for the peculiar needs of the deaf and dumb and the blind, are probably not surpassed in any similar school in the United States, and we have every reason to believe that the Institution is fulfilling its beneficent mission in a manner creditable to its management and to the State.

The number of pupils under instruction during the two years ending July thirty-first, is one hundred and twelve, classified as follows:

Deaf and dumb—males 39, females 28—total	67
Blind—males 29, females 16—total	45
Total, both classes	112

To instruct these pupils, six teachers, besides the Principal, have been employed—three in the deaf mute department and three in the department of the blind. The following list of classes, examined at the close of the last term, will give an idea of the curriculum of study:

	No. classes.
Department of the deaf and dumb.	
Elementary lessons	3
Course of instruction	2
Biblical studies	5
Language studies	2
Written arithmetic	5

List of Classes Examined—Continued.

	No. Classes.
Mental arithmetic	4
Writing	3
Geography	2
Physical geography	1
Chemistry	1
Natural philosophy	1
Algebra	1
Latin	1
Paley's Natural Theology	1
Department of the blind.	
Mental philosophy	1
Rhetoric	1
Political economy	1
Geometry	1
Algebra	1
Grammar	1
Physiology	1
Reading	1
Writing	1
History	3
Written arithmetic	4
Mental arithmetic	3
Geography	2
Spelling	2

The hours of recitation are from eight o'clock A. M. till one o'clock P. M. The afternoon hours, from three till five o'clock, are devoted to mechanical instruction. The trades taught are shoemaking and cabinet making to the deaf and dumb, and basket making to the blind.

The recent removal of the University to the site at Berkeley brings its sphere of usefulness within reach of the Institution. Already two deaf mutes have entered college—one in the scientific course, the other in a special course of chemistry and physics. It is believed that no congenital mute ever before entered a college to compete with students who could hear, and the progress of these young men will be watched with great interest.

Of late years, the subject of compulsory education of the deaf and dumb has received much attention. The objections which hold against a general statute, have little weight as applied to a class of the community who, without education, are not amenable to law. The frequent acts of violence committed by ignorant deaf mutes render legislation upon this subject a matter of public safety, to say nothing of humanity, and no time should be lost in framing a law which shall make it obligatory upon every parent of a deaf mute to send him to school for a term of not less than five years.

VII.—PRIVATE AND DENOMINATIONAL.

DENOMINATIONAL AND PRIVATE SCHOOLS.

ST. MARY'S COLLEGE.

This College is situated on the old Mission Road, about five miles from the City Hall. It is a brick building, in the old gothic style of architecture, sufficiently capacious to accommodate three hundred students. The institution is in charge of the Christian Brothers, a society whose sole occupation and aim is the education of youth.

The College was opened in July, eighteen hundred and sixty-three. The object of the institution is to impart a thorough education, combined with religious instruction. There are three distinct courses—the Scientific, the Classical, and the Mercantile—each affording every facility for acquiring a thorough knowledge of the subject.

Bro. Justin, President; Bro. Cianan, Vice President, and Professor of Mathematics and Natural Sciences; Bro. Sabinian, Treasurer; Bro. Genebern, Professor of Logic, Ethics, and History; Bro. Thomas, Professor of Metaphysics and Astronomy; Bro. Emilian Walter, Professor of Greek, Latin, and German; Bro. Julianus, Professor of Modern Languages; Bro. Gustavus, Principal of Commercial Department; L. Taaffe, A. M., Professor of English and Mathematics; Wm. J. Hyde, A. M., Professor of Latin and English Literature, and English Composition; Bro. Hilary, Prefect; Bro. Baptist, Assistant Prefect.

There are seven other gentlemen employed at teaching in the establishment.

The number of students in attendance is two hundred and twenty-five. The yearly expenses of a student, including board and tuition, is three hundred dollars. The number of graduates for the scholastic year eighteen hundred and seventy-two was two—one A. B. and one B. S. The number for eighteen hundred and seventy-three was six—one A. M., two A. B., and three B. S. In the Business Department, twenty-five young men received diplomas.

The library consists of two thousand five hundred volumes. The apparatus is valued at two thousand dollars. The buildings and fitting up with the late improvements, cost one hundred and twenty thousand dollars. The College farm, consisting of sixty acres, is valued at one hundred thousand dollars.

UNIVERSITY OF THE PACIFIC (METHODIST EPISCOPAL).

SANTA CLARA.

Incorporated, eighteen hundred and fifty-one. First collegiate class formed, eighteen hundred and fifty-four.

Rev. A. S. Gibbons, A. M., M. D., President and Professor of Intellectual and Moral Science.
Rev. J. N. Martin, A. M., Professor of Ancient Languages.
Rev. T. H. Sinex, D. D., Professor of Mathematics.
Rev. O. S. Frambes, A. M., Professor of Natural Sciences.
Henry Cutler, Professor of Instrumental Music.
Mrs. S. E. Frambes, M. S., Preceptress.
Mrs. Louize M. Curtis, Teacher of Ornamental Branches.
Mrs. M. A. Hamm, Teacher of Vocal Music.

Whole number of students:

Male	78
Female	58
Total	136

Cost of tuition per year, average, $48.
Estimated yearly expenses, including board, $295.
Number of graduates, present year, 6; whole number, 82.
Volumes in libraries, 2,000.
Value of apparatus, $2,500.
Value of College grounds and buildings, $40,000.

This institution was chartered in August, eighteen hundred and fifty-one, as the California Wesleyan College, which name was afterwards changed, by Act of the Legislature, to that which it now bears. A school building was erected, in which was opened the Preparatory Department, in May, eighteen hundred and fifty-two, under the charge of Rev. E. Bannister, Principal. Near the close of the following year, another edifice was so far completed that the male students were transferred to it, and the Female Collegiate Institute was organized, with its special course of study, and continued in the original building.

In eighteen hundred and fifty-four the classes of the College proper were formed; and in eighteen hundred and fifty-eight, two young men, constituting the first class in the Classical Course, received the Degree of A. B., they being the first to receive that honor in California.

In eighteen hundred and sixty-nine the two departments were consolidated, and ladies and gentlemen were admitted to the same classes, to receive, on graduating, the same degrees.

In January, eighteen hundred and seventy-one, the school was removed to the new and commodious building erected on the College grounds, about half way between Santa Clara and San José, and near the Alameda road.

After many years of pecuniary embarrassments, the liabilities of the

institution are now provided for, and an endowment subscription, in notes and deeds secured, amounting to over forty thousand dollars. This subscription, so nobly begun by the Annual Conference of the M. E. Church, it is confidently expected, will soon be increased to an amount amply sufficient to meet the wants of the institution.

MILLS' SEMINARY.

SEMINARY PARK, BROOKLYN, ALAMEDA COUNTY.

Date of organization, eighteen hundred and seventy. Denomination or special object of school, unsectarian, but eminently Christian. Name of President and Dean of Faculty, Rev. C. T. Mills, D. D. Number of professors and instructors, twenty-two—ladies and gentlemen. Whole number of students in attendance during the year, female, two hundred and seventy. Estimated yearly expenses of student, including board, three hundred and fifty dollars. Number of graduates, thirty-five. Number of volumes of library, one thousand five hundred. Value of apparatus, eight hundred dollars. Value of college grounds and buildings, one hundred and fifty thousand dollars.

SACRED HEART PRESENTATION CONVENT.

CORNER TAYLOR AND ELLIS STREETS, SAN FRANCISCO.

Date of organization, June, eighteen hundred and sixty-nine. Denomination or special object of school, free. Name of President and Dean of Faculty, Mary Teresa Comerford, Superioress. Number of professors and instructors, twenty-four. Whole number of students in attendance during the year, female, eight hundred. Tuition free. Number of volumes of library, three hundred.

ST. VINCENT'S COLLEGE.

LOS ANGELES, CAL.

This institution was organized in the year eighteen hundred and sixty-seven, and chartered in eighteen hundred and sixty-nine. It is a Catholic institution, conducted by priests of the congregation of the Mission, and devoted to the moral and intellectual training of youth.

The Faculty numbers four professors, who, to the duties of the class-

room, add a constant supervision over the pupils during the hours of study.

The cost of tuition and board for ten months is two hundred and fifty dollars; washing (if done at the College), thirty dollars; day students, according to grade, thirty dollars and fifty dollars; books and stationery at current rates; music forms an extra charge. Number of students during the year, sixty.

The scholastic year is divided into two sessions, ending, respectively, January sixteenth and June sixteenth. Parents and guardians are furnished with reports, carefully prepared, from semi-annual examinations.

The city assessment this year rates the buildings and grounds at seven thousand five hundred and twenty dollars. The College is beautifully located, and offers many advantages for the acquisition of a classical or a commercial education.

PACIFIC METHODIST COLLEGE.

SANTA ROSA, CALIFORNIA.

Date of organization, eighteen hundred and sixty-two. Denomination or special object of school, Methodist Church South. Name of President and Dean of Faculty, A. L. Fitzgerald. Number and classification of professors and instructors: six professors and four instructors. Whole number of students in attendance during the year: male, one hundred and thirty-one; female, one hundred and twenty-nine; total, two hundred and sixty. Cost of tuitition per year, sixty dollars. Estimated yearly expenses of student, including board, two hundred and seventy-five dollars. Number of graduates for past year, one; since organization, (34) thirty-four. Number of volumes of library, five hundred. Value of apparatus, three hundred dollars. Value of college grounds and buildings, thirty thousand dollars. An era of marked prosperity began with the reorganization of the College in eighteen hundred and seventy. The number of students for this, the middle of first term eighteen hundred and seventy-three and seventy-four, is (205) two hundred and five.

STATE PRISON SCHOOL.

SAN QUENTIN, MARIN COUNTY, CALIFORNIA.

Organized in eighteen hundred and sixty-nine. Its object is the reform of prisoners. M. Smith is the present instructor, assisted by a corps of twenty or thirty teachers. The weekly attendance is about two hundred. The library connected with this school is valued at thirty-five hundred dollars. Considering the unfavorable circumstances of the system of contract, want of room, light, etc., the progress of the school is encouraging—there being a marked improvement in many of those who attend. The branches taught are English, French, Spanish, arithmetic, geography, algebra, and geometry.

CALIFORNIA MILITARY ACADEMY.

OAKLAND, CALIFORNIA.

Date of organization, January ninth, eighteen hundred and sixty-five. Denomination or special object of school—undenominational—academic course for male students. Name of President, David McClure. Number of professors and instructors, nine. Whole number of students in attendance during the year: male, one hundred and seventy-six. Estimated yearly expenses of students, including board, three hundred and fifty-four dollars for English course. Number of graduates, fifteen. Number of volumes of library, about one thousand five hundred. Apparatus, mostly lost in fire. Value of College grounds and buildings, seventy-five thousand dollars.

CHRISTIAN COLLEGE OF CALIFORNIA.

SANTA ROSA, CALIFORNIA.

Date of organization, September twenty-third, eighteen hundred and seventy-two. Denomination or special object of school, the usual literary exercises, with a Bible Department for those who may wish it. Name of President and Dean of Faculty, Alexander Johnston. Whole number of students in attendance during the year, male, one hundred and thirty-one. Estimated yearly expenses of student, including board, about two hundred and seventy-five dollars. Number of graduates, two. Value of college grounds and buildings, about thirty-five thousand to forty thousand dollars.

CALIFORNIA COLLEGE.

VACAVILLE, SOLANO COUNTY, CALIFORNIA.

Organized January first, eighteen hundred and seventy-one. Denomination, Baptist. Designed for both collegiate and theological instruction. Number of teachers, four. Number of students, about one hundred. Name of President, A. S. Worrell. Name of Dean of Faculty, Lafayette Lillared. Tuition, fifty to sixty dollars per annum. Expenses, per annum, about three hundred dollars, including all charges. No graduates. Volumes, about fifteen hundred. Apparatus not yet complete. Value of College grounds, buildings, etc., twenty-five thousand dollars. The institution is in a very prosperous condition.

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